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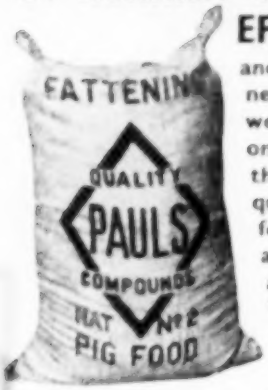

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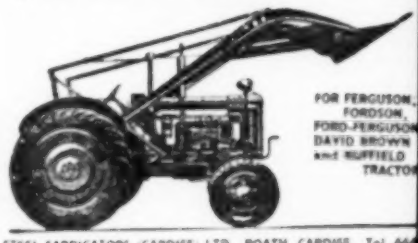

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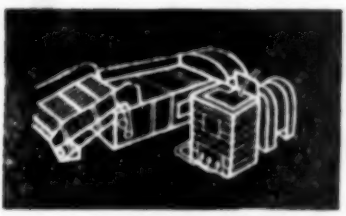

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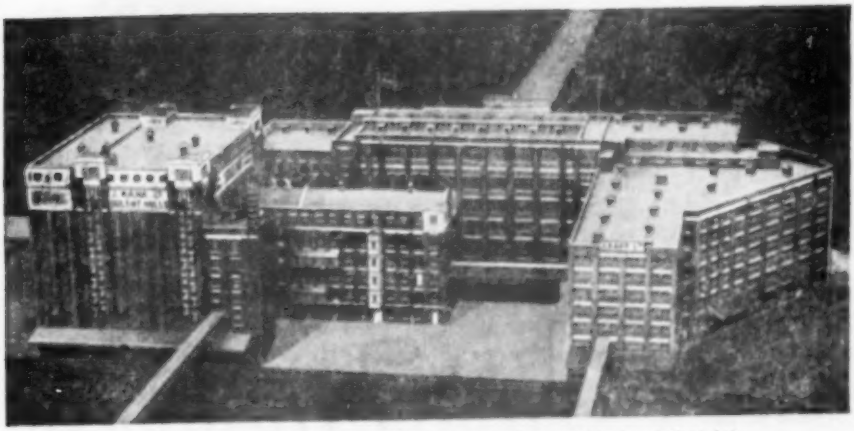

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AGRICULTURE

THE JOURNAL OF THE MINISTRY OF AGRICULTURE

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VOL. LVII No. 4 JULY 1950

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AGRICULTURE

THE JOURNAL OF THE MINISTRY OF AGRICULTURE

VOL. LVII No. 4 JULY 1950

THE ROYAL SHOW, 1839—1950

ALEC HOBSON, O.B.E.

Secretary, Royal Agricultural Society of England

IN 1839 the English Agricultural Society, formed the previous year, held its first country meeting on 7 acres of land at Oxford. This year the Royal Show, which has grown from that tiny seed, comes back to Oxford for the third time with a showground covering 150 acres.

The history of the Royal, from that first pioneer effort to its present status as the largest show of its kind in the world, provides an illustration of the progress of British agriculture. The gradual addition of separate classes, as the need arose, marks the evolution of the different livestock breeds. The permanent addition of a poultry section in 1885 followed the development of commercial poultry farming. The new machines which appeared year after year mirrored the growth of mechanization.

The " father " of the R.A.S.E. was the third Earl Spencer, Chancellor of the Exchequer in the Whig Government of 1830, who abandoned politics when he succeeded to the title to devote his time to his estates and his real interest—farming and his herd of Shorthorn cattle at Wiseton. At the annual dinner of the Smithfield Club at the Freemasons' Tavern in December, 1837, he proposed the formation of a society which would help to improve agriculture as a whole, as the Smithfield Club was doing for cattle.

At a further meeting in May, 1838, the English Agricultural Society was formed, with Earl Spencer as its first President. Less than two years later it was granted by Royal Charter the title of " The Royal Agricultural Society of England."

In June, 1838, arrangements were started for the first " country meeting " at Oxford, which was duly held on July 16 and 17, 1839, on land at Holywell belonging to Mr. John Pinfold, now the site of Mansfield College. In the early days of the Society the main object of the meetings was the reading of papers and discussions by members and trials of implements ; the one-day show, open to the public, was considered a subsidiary part of the programme. It did, nevertheless, cause the greatest interest and excitement, and attracted over 20,000 people. The livestock entries totalled 213, and 54 implements from 19 manufacturers were exhibited.

Both visitors and exhibitors went to great trouble to get themselves and their animals to Oxford, which the railway had not then reached. There was the journey of Thomas Bates who brought four of his Shorthorns from Kirklevington by boat from Middlesbrough to London, from there up the canal to Aylesbury and the remaining 23 miles on foot, to win four of the five Shorthorn prizes. One of the animals was the famous bull " Duke of Northumberland," then three years and nine months old. It is interesting to note that this bull lost 28 stones, or nearly one-sixth of his weight, on the journey to Oxford and back.

Then there was the party which travelled by stage-coach and post-chaise from Devon, putting up two nights on the journey. Among them was Mr. George Drewry, an experienced and successful breeder, who afterwards said of the show that " there had been nothing like it before and many said there would never be another like it".

In one sense he was right, though not perhaps in the way that he meant it. For the Royal never stood still, but grew and changed each year as the progress of agriculture made new and different demands on it.

Evolution of Livestock Classes At the first Oxford Show the only cattle breeds given separate classes were Shorthorns, Herefords, and Devons, for which there were respectively 27, 24 and 15 entries. All other cattle were classed together as " any other breed or cross". From 1846 onwards cross-breds were excluded from this fourth class, which was confined to " other pure breeds".

In 1851, at Windsor, when a special effort was made to get a representative collection of all the improved breeds, there were separate classes for Longhorns, Channel Island breeds, Sussex, Scotch Horned, Scotch Polled and " Welsh, Irish or other pure breeds". Ayrshires won all the prizes for Scotch Horned cattle, and William McCombie of Tillyfour won three of the four prizes in the polled classes with his Aberdeen-Angus, the first time improved specimens of the breed had been seen at an English show.

Soon the variety of different breeds began to set a problem in the class for " any other breed". The judge of this class in 1858 at Chester was faced with a collection comprising 2 Alderneys, 4 Ayrshires, 4 Polled Norfolks, 5 Polled Angus, 2 Welsh, 3 West Highland cattle, 1 Galloway and 1 Brahmin (or Indian Zebu)! A few years later separate classes were made for Sussex, Longhorns, Welsh, Kerry and Channel Island cattle.

So, as the different breeds began to establish their right to " a place in the sun," new classes appeared in the show list, until, by the Jubilee Show of 1889, it bore a close resemblance to that of a modern Royal. The only notable omissions were classes for Dairy Shorthorns and Friesians. Classes were first provided for Dairy Shorthorns in 1905 (the year the Dairy Shorthorn Association was formed), and that year milk yield classes were introduced. It was not until 1911 that the British Friesian (then called the British Holstein) appeared at the Royal Show.

In the case of other livestock, too, the original classifications provide an interesting contrast with present-day shows.

In 1839 pig breeds were very ill-defined, and the mixed entries at the show of eight boars, four sows and four pens each of three young animals were described by a contemporary writer as " neither numerous nor remarkable". Four years later the pig section was divided into " large " breeds and " small " breeds, and the Berkshire seems to have been the first breed to have had a class to itself, in 1862. It was still impossible to recognize other specific breeds but in following years separate classes were provided for " A Large White Breed," " A Small White Breed," and " A Small Black Breed". Middle Whites were added in 1882 and by the Jubilee Show classes for Large Whites, Small Whites and Tamworths were included.

For horses also the first meeting provided no breed classification. In 1851 separate classes were made for Suffolk horses, and in 1876 for Clydesdales, but up till 1882 all other heavy horses were grouped as " agricultural horses". That year the English Cart Horse Society, formed four years earlier, changed its name to the " Shire Horse Society," and at the following year's Royal a special class for Shire stallions was introduced.

The different sheep breeds emerged more rapidly. In 1839 they were divided into Leicesters ; Southdowns and other short-woolled sheep ; and long-woolled sheep other than Leicesters. In 1857 the second class was further divided into " Shortwools other than Southdowns". By 1862 there were seven breed classes, and by 1889 these had grown to twenty-three.

Agricultural Machinery and Implements One of the objects of the R.A.S.E. was " to encourage men of science in the improvement of agricultural implements," and at the second meeting, in 1840, a prize was offered for any new agricultural implement of merit. The following year there was some attempt at a trial of exhibits.

One of the most interesting exhibits of the 1842 show was a rotary tiller which consisted of spoon-shaped teeth fixed to a large barrel. But trials revealed that the soil adhered to the teeth and blocked the spaces between until the machine rolled rather than tilled the ground !

A prize of £500 offered in 1856 for a " steam cultivator " brought only two entries. Neither was awarded the prize, but one of them, John Fowler's steam plough, won an award two years later. In 1878 a Gold Medal was awarded to McCormick's binder. Laval's cream separator was exhibited for the first time in England at the following year's Royal.

Work on milking machines had been going on for some time when the " Murchland " machine, embodying the new feature of a vacuum pipe, was shown in 1891. But it was not until 1905 that the Society's Silver Medal was awarded to a milking machine which included atmospheric motors suspended beneath the cow and worked in conjunction with double-walled cups.

Trials of eight crop drying machines in connection with the 1882 show were a failure. None of the machines—seven of which worked on the principle of introducing hot air into the stack—seem to have been able to compete with the consistently wet weather. The judges reported that " bad and fickle as is this climate, they would far rather take the chances of weather than trust to any of the expedients brought to their notice". That was that ; and while interest in silage grew, little more was heard of crop driers at the Royal until, in 1925, a new type of plant gained a Silver Medal.

From the " Ivel Agricultural Motor," awarded a Silver Medal in 1904, tractor entries produced many innovations until, in 1912, the Daimler Company exhibited a huge 105 h.p. tractor, said to be capable of drawing a 21-furrow plough. In 1920, when the R.A.S.E. held comprehensive tractor trials in Lincolnshire at a cost of £5,000, thirty-eight machines were tested and the conclusion reached that there was now a wide choice of excellent tractors available.

This Year's Royal And so we come to this year's Royal Show at Oxford from July 4 to 7, where livestock from about 70 pure breeds are competing in over 360 classes for prize money totalling £20,000. There are 1,864 cattle, 1,137 pig and 748 sheep entries, and 420 entries in the breeding classes for horses.

An experiment has been made this year in stabling together all the livestock entries of the same breed and sex from one exhibitor (except in the case of horses). The advantage to the exhibitor and herdsmen must be weighed against the disadvantages of the public seeing animals in different classes standing together, and possible difficulties in getting classes into the ring.

One of the outstanding features of agricultural shows since the war is the new design of the Ministry of Agriculture's exhibit. Covering 1½ acres,

it is indeed " a show within a show " and often attracts 1,000 visitors at a time. Each year a different " theme " is illustrated by live animals, crops and grasses grown on the site and interesting models of farms. In 1947 the central theme was dairying and ley farming, the following year beef cattle and pigs, and last year, at Shrewsbury, the emphasis was on sheep.

This year the exhibit aims at teaching the lesson of higher output with lasting improvement. The outside plots show the cropping of a 250-acre Cotswold type of farm in relation to the targets of the agricultural expansion programme ; typical rotations for watered and unwatered land ; the prevention of crop losses through weeds, wireworm and seedborne diseases ; and the management of grassland. An interesting feature of the indoor section is a livestock demonstration on the production of beef from dairy herds. It will also illustrate the feeding of pigs on home-grown foods ; different qualities of silage and how to feed it to save concentrates ; methods of handling, conditioning and storing grain ; and exhibits showing the recent advance of attestation.

The dried grass competition, held for the first time last year, is this year divided into national and regional contests. In addition to a prize of £10 for the best sample in each region, all samples automatically compete for the national prizes.

The competition for the best-managed woodlands—which embraces a different area each year—is open to estate owners in Gloucestershire, Wiltshire, Worcestershire and Herefordshire. New classes for fencing and other items made from thinnings are included in the Forestry Exhibit.

There is a record number of over 700 trade and machinery stands covering about 40 acres, and 22 entries have been accepted in the new implements section.

For the first time since the war classes are included for Rough Fell and Scottish Blackface sheep, and the four-in-hand coaching teams have been revived. Additions to the Young Farmers' competitions include one on how to demonstrate country crafts and a sheep judging contest. For the first time a Canadian team has entered the Y.F.C. International Dairy Cattle Judging competition.

The regular attractions will be found again at Oxford this year. The flower show, jumping competitions, musical ride (given this year by the Metropolitan Mounted Police), the farriery contests, the parade of prize-winning cattle, the tractor parade and the many educational exhibits.

The " Royal " has travelled far since it first came to Oxford in 1839—and indeed since its second visit to the city in 1870. But each year as it moves onwards—visiting Cambridge next year, Newton Abbot the year after, and Lancashire in 1953—it will continue to change and develop to meet the needs of a changing agriculture.

Still guided by its motto " Practice with Science " chosen by Earl Spencer at the Society's formation, the R.A.S.E. continues to encourage the pioneers and to bring the scientists' discoveries to the knowledge of the practical farmer.

THE SETTING OF THE ROYAL SHOW, 1950

C. S. Orwin, M.A., D.Litt.

IT is just 111 years since the first Royal Show to be held was staged at Oxford. A contemporary print depicts the showyard just outside the city wall, on the north, with the dome of the Radcliffe Camera and the spires and pinnacles of churches and colleges, in the background*. Kidlington, the site of this year's Royal, is a few miles farther north, on land which once formed a part of the great estate presented by the nation to the first Duke of Marlborough.

Kidlington lies in the Upper Thames valley, where the river forms the dividing line between the midland and southern counties of England. Here, the Chiltern Hills and the Berkshire and Wiltshire Downs to the east and south, and the massive limestone formation of the Cotswolds to the west and north-west, embrace a great valley drained by the Thames and its tributaries. Reading on the east, Swindon to the west, and Oxford in the middle, are the only industrial towns of any size in the area ; the Royal Show of 1950 enjoys a setting almost entirely rural.

The surrounding ring of hills provides many vantage points overlooking it. From Stokenchurch Hill in the Chilterns, the eye travels westward over the flat, fertile valley of the Thame right up to Oxford. From the Berkshire Downs near Wantage, a great view opens up, as far as the Chilterns on the east, and across the valley of the Ock to Boar's Hill, covering Oxford, to the north ; then, turning westward, up the Vale of the White Horse right away to the High Cotswolds, in Gloucestershire. Or, crossing the Thames Valley into the Cotswolds and looking back from the Cheltenham Road by Burford, the whole line of the Downs is in view, from Goring Gap on the east, where the Thames breaks through them, on to White Horse Hill in the south, and then away westward into Wiltshire.

Most of the parishes of the hill country run in narrow strips, often no more than two or three fields wide and several miles long, from the Vale to the top of the downs, where they abut on others rising from the bottom of the next valley. It is an age-old plan, designed to give the communities water and shelter together with good meadow grass, at the bottom ; dry lying for themselves and their livestock above the lowest contours ; fertile ploughlands, easily worked, on the middle slopes, and plenty of rough grazing for their livestock at the top.

North Thames Area Taken as a whole, it is not a district of outstanding fertility. The chalk of the Chilterns is much of it uncultivated, and the great beechwoods which are its chief characteristic give employment to a small population supplying timber to the local chair-making industry. In Berkshire and Wiltshire, the downs, treeless for the most part, at one time supported a great sheep population, where today it would be hard to find a shepherd and his flock. On the other hand, the revival of arable farming is nowhere more manifest perhaps than in the downlands. Thousands of acres of sweet-scented turf, undisturbed since the men of the Iron Age cultivated it in little square fields, the bounds of which are still visible, have come back into cultivation ; the tractor and the combine harvester have displaced the digging-stick and the sickle of the husbandman of 2,000 years ago. Only the trainers' gallops remain unploughed, in many places, for the principal industry of this neighbourhood, apart from farming, is the training of racehorses.

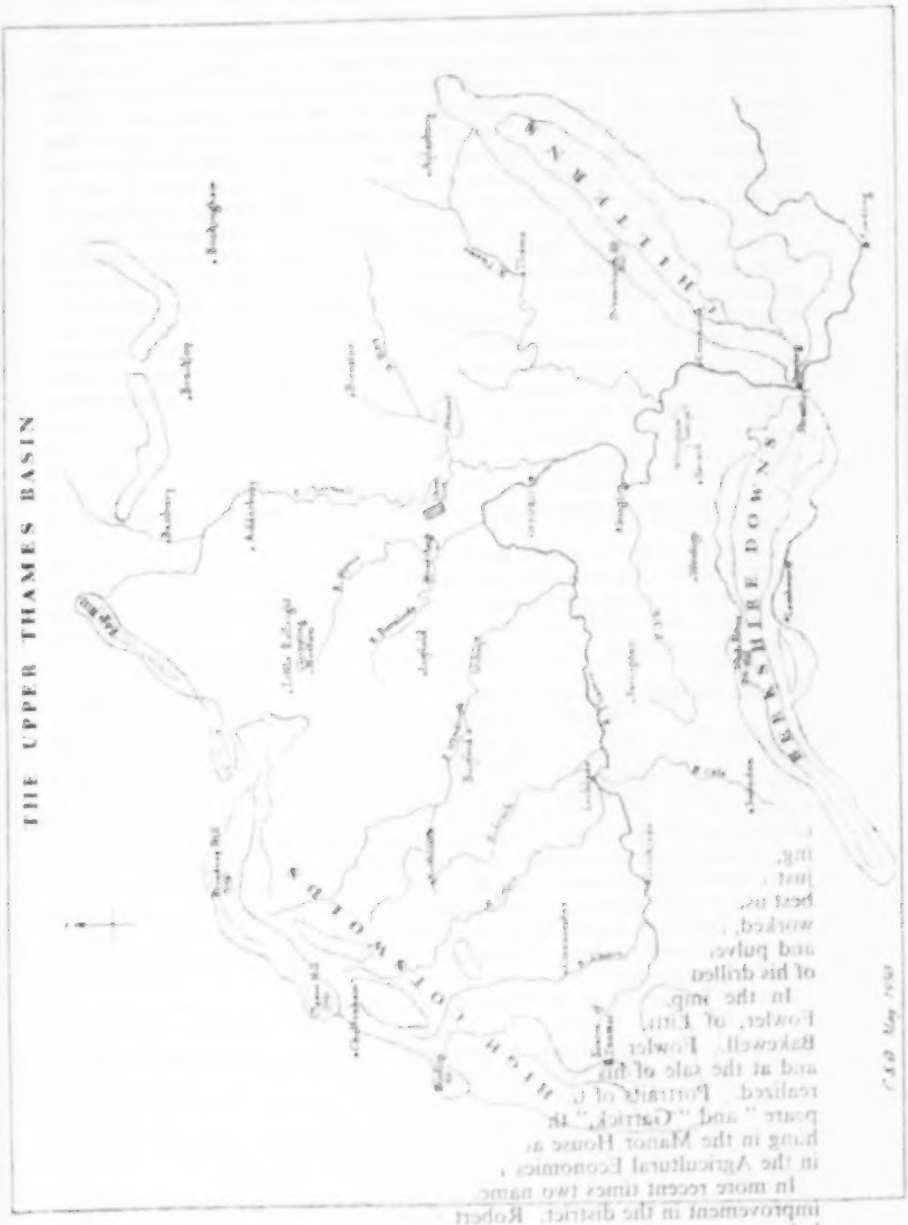
* Between the University Parks and Holywell.

There is good farming land, however, all along the foot of these downs. On the north side of the Thames, the soils vary from the sharp river-gravel, the source of a considerable ballast industry, to the clay of the little Otmoor basin north-east of Oxford, in which washings of the finest particles of the Oxford clay brought down and deposited there by the River Ray, give rise to what is probably the heaviest soil in England. It is a district of mixed farming, in which dairying predominated before the war, but which has experienced, of course, a great revival of arable farming in recent years, accompanied by the improvement of many old pastures by alternate husbandry. An interesting feature of the district is the high proportion of immigrant farming families. Everyone is aware, no doubt, of the movement of farmers eastward from the areas of family farming in the west of England, in Wales and in Lancashire, particularly during times of agricultural depression. The high proportion of small farms, the general prevalence of livestock farming, the land hunger due to lack of alternative occupations, all these things combined to maintain high rents in these districts at times when the capitalist arable farmers of the midland and eastern counties were suffering from depression and low prices. As they went out of farming, their places were taken by the hard-working family farmers of the west, rejoicing for the first time at the chance of getting cheap land, who brought with them their dairying and stock farming, branches of agriculture more resistant to economic pressure than corn growing.

South Thames Area South of the Thames, the country between the river and the downs shows, perhaps, even greater variety. There is the same belt of river gravel, with the same sand and ballast industry, but the ridge of greensand which stretches eastward from Faringdon, is a striking feature of the landscape. It carries an area of fruit growing and market gardening; hop growing, once a well-diffused local industry but now long unknown, has been successfully reintroduced. A more important fruit-growing area of this district, however, occurs farther south, on the strip of malmstone which, at Harwell, has given rise to the well-known cherry-growing industry, and, more recently, to apples and mixed fruits as well, managed on the most up-to-date lines.

An interesting district, though agriculturally less productive, is the famous Vale of the White Horse. Drained by the River Ock and its numerous tributaries, it stretches for some five-and-twenty miles from Cricklade in the west, to Abingdon on the east. In early times it must have been a vast swamp; indeed, its village names are evidence of this, for most of those which do not end in "ey" (island), end in "ford," river crossings for the trackways. It is still a wet district, but the clearing of the rivers and land drainage have reclaimed all of it for farming, and much of it for arable cultivation.

The Cotswolds Crossing the Thames near to its source, the great mass of the Cotswolds completes the setting of this year's Royal showyard. The Thames Valley near its head at Cricklade is on the 250 foot contour, while the Cotswold escarpment above Cheltenham, some 18 miles to the north, reaches 1,000 feet, this elevation being sustained past Cleeve Hill and Broadway Hill, and so on, further north. The view from this ridge westward over the Severn and the Golden Valley into Wales, is one of the finest in the country. The high land continues north-east on a diminishing scale to Edge Hill, fading out northward in the great Midland plain, and falling eastward into the valley of the River Cherwell, which runs due south, past Banbury, to join the Thames at Oxford.


THE UPPER THAMES BASIN
CHILTERN HILLS
BERKSHIRE DOWNS
COTSWOLDS

The great wedge of country contained between these two rivers is essentially a stone country. Stone mansions and cottages, stone farmhouses and farmsteads, are characteristic, and beautiful stone slates form the roofing of many of them ; the stonemason's and the stonewaller's art is manifest throughout the landscape, for hedges are rarely to be found. The district is intersected by a series of small valleys, of which those of Churn, Colne, Leach, Windrush, Evenlode and Glyme are the more important. All of these streams discharge their waters into the Thames, and the district they serve constitutes the Low Cotswolds, at one time much more heavily wooded than it is today. Wychwood forest, which ran down from what is now the wireless station at Leafield to Woodstock, within two miles of the showyard, was only disafforested by the Crown and reclaimed and equipped for farming, a hundred years ago. The High Cotswolds, however, stretching northward from Burford and Northleach on the Oxford-Cheltenham road, always a great open tract, has long been in arable occupation. Here was a great wool industry in Tudor times. It developed its own breed of sheep, the Cotswold, now superseded everywhere by more modern breeds, and the beautiful Perpendicular churches of the district, with the magnificent tombs in some of them of the wool magnates of those days, bear witness to the importance and prosperity of the industry. More recently the High Cotswolds developed as a district of light arable farming, on the four-course system. The blanket mills at Witney and the cloth mill at Chipping Norton are survivals of the extensive woollen manufacturing industry, which took precedence of Yorkshire in the west of England before water power had given place to steam.

Eastward of the Cherwell, the flat, fertile Thame valley stretches away to the foot of the Chilterns, the starting point of this brief topographical survey. In it arable farming predominates, with considerable remains of old forest north-east of Oxford, and the Wittenham Clumps, a notable landmark, rising from the plain near Dorchester.

Notable Farmers Considered as a whole, the district in which this year's Royal Show is set is not one of the more intensive farming areas of the country ; production is slightly below the national average. But today and at all times it has contributed its share of farmers who have been notable in the history of British agriculture. One of the earliest of them was Jethro Tull, the son of a Berkshire landowner, who was one of the pioneers of mechanized cultivation. Bad health drove him from the Bar into farming, in 1699, and he practised it, first, at Crowmarsh, and later in Wiltshire, just outside the southern boundary of this survey. Anxious to make the best use of some precious sainfoin seed, he invented the first seed-drill which worked, and later, having come to realize the importance of tillage to aerate and pulverize the soil, he devised the horse-hoe to work between the rows of his drilled crops.

In the improvement of livestock, an Oxfordshire pioneer was Robert Fowler, of Little Rollright, by Chipping Norton, the friend of Robert Bakewell. Fowler's Longhorn cattle continued the best Bakewell pedigrees, and at the sale of his herd in 1792, prices remarkable for those days were realized. Portraits of the more famous of his animals, the bulls " Shakespeare " and " Garrick," the cow " Longhorned Beauty " and others, which hung in the Manor House at Little Rollright for nearly 150 years, are now in the Agricultural Economics Research Institute at Oxford.

In more recent times two names are famous in connection with livestock improvement in the district. Robert Hobbs, senior, of Kelmscott, by Lechlade, was noted fifty years ago for his flock of Oxford Down sheep. It was

his outstanding work for the evolution of the Dairy Shorthorn, however, by which he is best known today, and it has made the Kelmscott herd famous all over the world.* Further north, at Adderbury, near Banbury, Hugh Stilgoe senior, representative of a family who had been tenants of a Christ Church, Oxford, farm for more than a hundred years, was known in many parts of the globe for his Oxford Down flock.†

The late George Baylis is in quite another category. His claim to fame rests on his great achievement in arable farming and corn growing during the long agricultural depression of last century. By applying the lessons of the Rothamsted experiments in continuous corn growing, he raised a farming enterprise of 350 acres to one of 12,000 acres during his lifetime, and provided the first successful demonstration of farming without livestock.

These men, pioneers in their own times, have their successors today in the district, who carry on the advancement of agriculture in its many branches.

The map on page 157 illustrates the great variety in the topographical setting of this year's Royal Show. It may be claimed that the Upper Thames basin, with its rivers and streams, its downlands and hills, woodlands and farm lands, provides a landscape as satisfying to the artist as to the agriculturist.

THE FARMING PATTERN OF OXFORDSHIRE

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County Advisory Officer, Oxfordshire

OXFORDSHIRE, one of the smaller inland counties of England, with a total area of 479,000 acres and an agricultural area of some 383,000 acres, is irregular in shape, and, except for the Thames which borders the county for some eighty miles, lacks natural boundaries. The land rises in the north-west to the Cotswolds and in the south-east to the Chilterns, and between these two uplands lies the central plain, broken in the middle by the line of the " Oxford Hills " which run from south-west to north-east.

The county is drained by four main rivers and their tributaries ; (1) the Cherwell, which enters the Thames at Oxford after flowing from north to south in a wide valley, picks up the Sor Brook, the Swere and the Ray as tributaries : (2) the Evenlode flows from the north-west area with the Glyme and Dorn as tributaries, and enters the Thames at Eynsham : (3) the Windrush, flowing parallel to the Evenlode further south, enters the Thames at Newbridge : (4) the Thame, which joins the Thames at Dorchester, south of Oxford, flows from the town of Thame and picks up several tributaries in the form of brooks.

The average annual rainfall varies with altitude from 25 inches in the valleys and plains to 30 inches in the higher parts of the county. Droughts are not unknown.

Oxfordshire has no really big towns—it has been chiefly dependent on its farming, but now there are some industries—to mention a few, motor manufacturing and printing at Oxford, agricultural machinery and aluminium

* See article p. 169.
† See article p. 172.

works at Banbury, blankets at Witney, tweed mills at Chipping Norton, cement works at Shipton and Chinnor, and glove-making at Charlbury and Woodstock.

The soil types vary surprisingly, and yet there is not a great variety in the farming, which is generally mixed. In the Good Old Days the county was vaguely referred to as consisting of sheep and barley land, but, speaking generally, those days of hurdle sheep have gone and the farmers have, of necessity, turned their minds to other activities which have been largely controlled by economics, the lie of the land, type of soil, services available and, to no small extent, by the industrial undertakings mentioned above which drew any spare labour from a wide area in the surrounding countryside.

Six Farming Zones For convenience of description, the county can be divided roughly into five zones running diagonally from north-east to south-west, with a sixth zone as an infilling.

Zone 1, starting in the north, consists of the land around Banbury and Hook Norton, bounded roughly on the south-east by a line running from Deddington to the Rollrights. The oldest soil formations in the county are found here and comprise the lower, middle and upper lias, together with the inferior oolite on some of the higher ground. The last-named gives rise to light, sandy, almost " blow-away " soils, which are very poor indeed and require a system of farming which will continually enrich the soil with humus and essential plant foods, e.g., good, well-managed leys.

The upper lias gives rise to a heavy soil characterized by a content of small, rubbly lumps of rather dirty looking limestone. It does not cover a very wide area, and is obvious mainly as the clay caps on some of the dome-like hills in this area. The middle lias is loosely referred to locally as the " ironstone " country. A good deal of opencast working is practised on account of the high iron content of the limestone concerned. The soils are a heavy brash of fair depth, capable of being very productive, but phosphate fixation presents a problem. Lastly, almost all the valley floors are covered with a heavy lower lias clay ; spring lines are common throughout the area where pervious strata overlie clay phases.

This is a country of relatively steep-sided valleys with many small- to medium-sized farms, some of a larger acreage being located on the wider, upper slopes of the hills. Ironstone workings have been in existence for many years and are now being operated in the Wroxton and Bloxham areas. Some of the old works are derelict and are a blot on the countryside, but a certain amount of successful reclamation has taken place. The satisfactory outcome of this reclamation work would indicate that provided the bottom can be satisfactorily drained and the top soil redeposited in relatively small heaps ready for subsequent regrading, there is no reason why similar treatment on dry gravel pits, which are such an eyesore and source of nuisance from blowing weeds, etc., should not be extended and made a rule in future.

The area is one of mixed farming, with emphasis on milk. Many of the valley slopes are considered to be too steep for ploughing and arable cultivation. Banbury, the market town for the area, has a very live and up-to-date market easily accessible from London, Birmingham and the Midlands generally. The Northern Aluminium Works at Banbury attract a large number of young men from the adjoining villages, and the supply of labour to the farms presents some difficulty.

Zone 2, is bounded on the south-east by a line running approximately from Little Faringdon to Stratton Audley, and includes the Cotswold country with an extension east over the River Cherwell. The bulk of the farms here

are generally larger and situated on the stone brash, which, from both farming and geological angles, is of several kinds : (1) the " corn brash " of the geologists gives rise to heavy brash soils which tend to be potash deficient ; standard manuring practice will generally give satisfactory results. (2) The " sour brash," i.e., certain areas of the " forest marble " are often deficient in lime, potash and phosphate : the limestone is very hard and slow to weather ; the phases of stone and clay overlie one another in layers 3 feet or more in depth—and these are not very satisfactory soils to work. (3) The " limestone " brash : this is the thin, dry, hot, hungry land developed on the oolite. Complete fertilizers, combine drills and the new type of ley, appear to be the answers to successful cropping of the brash type of land.

Arable farming with sheep is " in the blood," but with a fall in the county sheep population from some 158,000 pre-war, to approximately 80,000, there is a notable change-over to ley farming and dairy herds, in spite of the difficulties of providing adequate water supplies and fencing of the large arable fields. Stock markets are held at Charlbury and Kingham.

Zone 3 is the area running down to the line Stanton St. John to Littlemore, with Otmoor as its centre. Here the land is mainly cold, wet clay, and probably forms the most difficult farming area of the county. This is where the " Oxford clay " comes into its own : it is the area of the valleys of the Ray and Lower Cherwell, and although in some parts the topography is undulating, it is generally low-lying and wet. The brooks, of which there are many, have little fall, and most fields need a ditch on four sides. Wherever this land is brought under the plough, drainage is most important : phosphates, and in many cases, lime, are deficient, and when these needs can be adequately met some very useful, heavy arable land results. Its maintenance in arable cultivation is comparatively expensive and the days in the year when the land is fit to work greatly restricted. By deepening the River Ray, the Thames Conservancy have made it possible for the farming of this area to be improved by mole and tile drainage, together with comprehensive ditching schemes, and land which could be grazed only during a very short period of the year for fear of severe poaching, now offers a longer grazing season and a considerable area has come under the plough.

Superimposed on the clay are the higher hills of the Corallian in the villages of Stanton St. John, Forest Hill and Holton on the outskirts of Oxford. The soil is of a sandy nature, inherently infertile and liable to blow away. A ley system of farming and heavy stocking is necessary to maintain fertility.

On the whole, the farms are small to medium in size, with dairying as the main enterprise. Oxford and Bicester are the market towns.

Zone 4 stretches to the foot of the Chilterns, roughly on a line from Chinnor to Crowmarsh, and includes some of our most fertile arable land, together with what is generally known as the Bullingdon Plain. This region consists of the Kimmeridge and gault clays ; the former on a line from Thame to the Baldons is drained by the River Thame, and is generally very deficient in lime and potash. Where drainage is efficient and the application of fertilizers is adequate, the land is capable of growing very heavy crops of grass and cereals. Rising as islands from this Kimmeridge area are the villages of Horspath, Cuddesdon, and Great and Little Milton, which are situated on the " Portland Beds " and give rise to the areas of market gardening, where considerable acreages of vegetables and potatoes, including " earlies," are grown.

The gault clay runs parallel to the Chiltern Hills, and is mainly an area of large farms, some devoted chiefly to corn growing, and the feeding of store

cattle, and others, where the gravels and alluvium are deposited on top of the clay, to mixed farming based on a ley system.

In the area as a whole dairying is playing an increasingly important part.

Two of our leading farmers live in this area, namely, Mr. S. J. Farrant of Burcote, who was a pioneer of ley farming in the county, and Mr. F. P. Chamberlain of Crowmarsh who has farmed without livestock for a quarter of a century.

The existence of the motor and printing industries in the City of Oxford, together with a general demand for employment by the various colleges, etc., makes the supply of labour to the farms in this zone, as also in zones 3 and 6, very difficult.

In addition to Oxford, there is a weekly market at Thame.

Zone 5 comprises the Chiltern Hills area, extending to the south-east corner of the county and includes the chalk belt, the lower slopes falling to the River Thames which bounds the west, south and east of this zone. The eastern area is a region of generally small dairy farms interspersed with large beechwoods and cherry orchards; on the western portion there are large arable downland farms, now devoted mainly to barley growing, most of the

sheep flocks having gone : in isolated cases dairy herds are being established.

At altitudes of between 500 and 800 feet there are areas of clay and flint usually highly farmed and giving good returns where due attention is paid to the correction of inherent deficiencies.

In the southern part of this zone are scattered areas of the formations of plateau gravel and Reading Beds : these soils are thin and inherently infertile and liable to burn in a droughty year. There used to be a greater number of cherry orchards, but during the years of depression many became derelict and now need clearing and replanting. Woodland, commons and residential properties are features of the countryside, and some of the farms are split up and scattered, and therefore difficult to manage.

Zone 6 comprises the infilling of the other five zones with gravels and alluvial deposits along the valley of the Thames and its tributaries. Included in these areas was a small acreage of our most valuable grazing pasture which would " fatten a bullock without cake," together with a much larger area of inferior grassland.

A considerable acreage of this land has now been brought under the plough ; the gravels are hot and hungry where they occur at a fair elevation, but in lower situations a higher water-table helps to some extent. These soils are free working and capable of being highly farmed, so that although not inherently fertile and almost universally acutely deficient in potash, some of the highest yields of corn, potatoes and sugar beet in the county are obtained in this area.

In the lowest lying areas running down to flood level, the Oxford clay is overlaid by a varying thickness of dark alluvial soil. This land is not easy to farm but when mastered can also be highly productive ; problems directly connected with it include a very high organic nitrogen content and a widespread acute deficiency of potash. The use of phosphates, together with adequate potassic fertilizers, appears to be the answer, but great difficulty is often experienced in achieving anything like adequate consolidation of the land. It is suggested that spring wheat and leys of the timothy meadow fescue type may be of invaluable service here in helping to maintain a diversity of cropping, since under a system of mixed farming some very notable enterprises have been developed. Improvement of the grassland which is considered impracticable to plough at these low flood levels has been achieved more by ditching, drainage and surface cultivations, together with liberal manuring, than by direct reseeding.

The Thames Conservancy has done excellent work in this area, especially in the upper reaches of the Thames and in the valley of the Windrush, where annual flooding caused considerable loss and anxiety to the farmers concerned.

Witney is an important market town in the largest part of this zone.

Crops and Livestock Since 1939, in answer to war and post-war national demands, the arable area has been increased from 35 per cent to 63 per cent of the agricultural area, and that despite the loss of 3,000 acres to aerodromes, etc. Wheat, barley and oats are still the main crops, but sugar beet and potatoes have played an increasingly important part during the last ten years. Yields generally have been up to the average for the country as a whole. It should be pointed out that there has been a considerable change both in the acreage and duration of leys in the county : whereas in 1939 the majority of the leys, amounting to 20 per cent of the arable area or 7.5 per cent of the agricultural area, were one-year leys, today they constitute some 30 per cent of the arable area or 18.5 per cent of the

agricultural area, and for the most part are leys of longer duration than one year. Ley farming continues to gain popularity in the county.

Mention must also be made of horticulture, which accounts for just over 2,000 acres—mostly in small units of up to 5 acres. The major portion is devoted to vegetables grown mainly to supply Oxford, but a certain quantity finds its way to London and Birmingham. The acreage of fruit is comparatively small, comprising some 100 acres of soft fruits and approximately 300 acres of top fruits. Glasshouse culture is popular and is generally in small units. Other interests of the horticulturist include nursery stock production, flowers, alpines, mushrooms, herbs, cobnuts, dwarf cherries and watercress. The county is well served by the Horticulture School at Waterperry, which is also famed outside the county.

So far as livestock is concerned, cattle, and in particular dairy cows, have increased in number considerably during the last thirty years, and even since 1939 have shown an approximate increase of 12 per cent. The priority given to milk production during the war, was, in part, responsible for accelerating the change-over from sheep to dairying, which was first dictated by the economic conditions of the period between the wars, together with the advent of the Milk Marketing Board. All the main dairying breeds are represented in the county—to mention only a few outstanding pedigree herds, we have the Churchill and Kelmscott Shorthorns, the Bradwell Grove Red Polls, the Elmwood Friesians, the Wilcote and Wychwood Jerseys, the Barford Ayrshires, and the Tackley Guernseys, whilst in the beef world we are represented by the Eynsham Aberdeen-Angus herd and the Chippinghurst Lincoln Reds.

Attestation is making steady and encouraging progress: of the 1,600 or so herds in the county, one-third are now attested. This represents some 27,780 head of cattle, or approximately 26 per cent of the total cattle in the county, compared to 14.1 per cent in England as a whole. There are also approximately another hundred herds at various stages on the way to attestation.

The sheep population, in common with that of other counties, has been about halved during the last ten years, but numbers are gradually going up again. This increase consists of grass sheep rather than the previously traditional Oxford Down and Hampshire Down breeds which were popular for arable folding.

Pigs, too, are on the increase, following the very low figures reached as a result of war-time conditions.

The pre-war figure for poultry has already been surpassed by some 16 per cent: the most noticeable feature of our poultry position during the last few years has been the rapid, and, at times, dramatic change from extensive to more intensive forms of production. On many farms we have seen the establishment of one-man unit poultry sections, where previously poultry had the freedom of the farmyard. The built-up litter system, the poultry yard and the laying battery are becoming very popular. In all cases the basic cost of housing is often overcome by adaptation and improvization of the existing buildings. Folding methods are beginning to pay dividends in the form of increased stock-carrying capacity on some of the thin stone brash farms in the Cotswold area. Probably the most spectacular progress has been made in table turkey production ; in the past twelve months quite a number of farmers have abandoned the old methods of rearing and feeding in favour of the " Motley system".

This all-round change in the picture of Oxfordshire farming, as compared with the pattern in 1939, reflects national and international demands, and we have seen a general change-over in our crop production to a system of

farming which, besides supplying priority crops, aims at greater self-sufficiency from our tillage, coupled with the introduction of a system of ley farming. Much progress has also been made with water supplies and fencing which are so essential for most efficient utilization of the leys.

FARMING AT BURCOTE

BURCOTE, Field and Manor Farms are three adjoining holdings in the parishes of Clifton Hampden, Dorchester and Drayton St. Leonard in South Oxfordshire, and together they comprise some 1,300 acres of fairly level land lying between the Thames and its tributary, the Thame. Part of it is on the lower greensand, which is easy working and moderately fertile but dries out rather quickly ; another area is valley gravel, which burns badly in dry seasons, and there is an area of about 150 acres of heavier, more retentive, land on Manor Farm and the adjoining part of Field Farm. About 120 acres is old pasture, and the rest comes in rotation under the plough.

When Mr. Farrant took Burcote Farm in 1919 he was told by his neighbours that it required plenty of feeding and a nice rain once a week ; also that the average rainfall was the lowest in the county ; this last has proved to be true, the average rainfall in the last ten years being only between 22 and 23 inches.

Manor Farm was taken over in 1929, when Mr. Farrant's son, J. B. Farrant, was taken into partnership, and Field Farm in 1936.

Crop Rotation and the Leys Burcote Farm originally covered some 500 acres, 50 of which was very poor old pasture and the remainder arable suffering from overcropping with corn during the first world war. With the Corn Production Act in mind, Mr. Farrant decided to farm it as arable, to maintain a good flock of sheep and winter fatten cattle, planning eventually to build up the fertility of the land. Following the repeal of the Corn Production Act and the slump in prices, this type of farming, however, soon proved unremunerative, and in 1926 it was decided to grass down and keep a dairy herd.

Fifty acres or so of arable land were put down with a modified Clifton Park seeds mixture, to which was added ½ lb. per acre of Kentish wild white clover, then 25s. per lb. Today the whole of the 500 acres, with the exception of a few small fields unsuitable for ploughing, are under the alternate husbandry system, and the normal rotation is : four years ley, followed by three grain crops which may be either (a) oats, wheat, barley, (b) wheat, oats, barley, or sometimes (c) wheat, barley, barley, depending on the prices ruling and the circumstances as regards stock feed in the autumn of the fourth year. The first of these is the most favoured, since it gives three to four months' extra grazing at the end of the fourth year of the ley. The three crops are followed by a cleaning crop—either sugar beet, potatoes, kale, mangolds or swedes, or vetches and oats ensiled, with a catch crop of rape following : then in the ninth year a further corn crop is grown and undersown with a ley once more.

This rotation is flexible and is varied in that some land each year is devoted to a one-year ley of broad red clover and ryegrass, or late-flowering red clover and ryegrass, the first cut being taken for silage and the aftermath cut for seed. The leys are either grazed entirely the first year or cut early for silage and then grazed. The seeds mixture which has been used until quite recently was made up of :

	lb. per acre
Perennial ryegrass	14 (9 lb. S. strains and 5 lb. Irish)
Cocksfoot	6 (S. 26 and S. 143)
Timothy	2 (S. 48)
White clover	1½ (S. 100)
Wild white clover	½
Broad red clover	2
Late-flowering red clover	2
	28

Cocksfoot has been found to be the most useful grass on the lighter land ; it is least affected by drought and produces far more keep than other species in dry seasons. But where the land is heavier a mixture containing timothy and late-flowering red clover with S.100 white clover is now being used to extend the period in the early summer when leafy silage can be made.

Experiments are also being made with simple mixtures at a much lower rate of seeding of cocksfoot and S.100 white clover and S. strains of ryegrass with S.100 white clover. These experiments have not gone far enough yet for a definite opinion to be formed, but Mr. Farrant is satisfied that the simple mixtures are not as good as the more comprehensive mixtures. The leys are dressed with a complete fertilizer every year, and extra nitrogenous dressings are used to get an early bite and an early cut for silage.

The alternate husbandry system has been practised on Burcote Farm longer than on any farm in Oxfordshire, and it is only because it has proved so successful that it has gradually been extended to the whole area, except for some 100 acres of river meadows, and a small area to which it has not yet been possible to bring water.

As there were very few hedges on the farms under the old style of farming, the ley system has necessitated the erection of many miles of fencing. This problem has been one of the headaches of the system. Wooden posts and five strands of barbed wire are used, the 6 feet posts being 11 yards apart with two droppers in between. Various kinds of wooden posts have been tried ; in the first place willow posts were used since there were plenty on the farm to be obtained merely for the cost of cutting, but in three years they proved to be dear at that price, as the whole fence had to be re-erected. Pressure-creosoted posts, though most expensive initially, have proved in the long run to be the cheapest. Those put in fifteen years ago appear to be as sound to-day as when erected, whereas other types put in later are having to be renewed. Water was another problem and has not yet been solved satisfactorily, but in most of the fields stock either have a water supply or have access to it. In exceptionally dry summers, like 1949, considerable quantities of water have had to be hauled from the river.

The Livestock The farm stock consists of 450 head of cattle, 200 breeding ewes and their lambs, 700 laying hens, and 6 horses. The cattle stocking is based on the two dairies of grading up and pedigree attested Dairy Shorthorns, 70 at Burcote and 80 at Manor Farm. No cattle, except

bulls, have been bought during the last ten years. The herds were founded on good type commercial Shorthorn heifers, and as far as possible good bulls from heavy milking and long-lived families have been used, but the dual-purpose characteristics of the Dairy Shorthorn have also been kept in mind.

The number in the two herds has gradually increased from the original 26 cows at Burcote in 1928 to today's figure of 150 milking cows, as shown above, and the daily production of milk is approximately 350 gallons.

All calves are reared on the bucket, from four days old the whole milk being gradually replaced by milk equivalent. They are given a little concentrate as soon as they will take it, and silage is introduced at about eight weeks. From twelve weeks they are entirely on dry food—namely, 3 lb. concentrates, plus silage and hay. For several years prior to 1940 the male calves from the best backed cows were reared, steered and fattened very successfully. Shortage of labour, however, and the claims of milk led to the dropping of the steer rearing for two or three years, but it was resumed later and the steers are now sold out as strong stores in the spring to be fattened on better grassland elsewhere. A bunch of 2½-year-old steers, several of them the sons of 1,000 gallon cows, and all sired by bulls from 1,000 gallon cows, were sold a few weeks ago at Banbury market, for £59 15s. each. These had been run with their sisters to about 20 months old, and were fed largely on oat and barley straw, together with either kale or silage, or both, until they came into the strawyard in January last, when they were fed 6 lb. of a mixture of crushed oats and beet pulp, with straw pulp, oat straw and a small feed of hay.

The bull is turned out with the heifers in late November, so that they calve in the autumn and early winter.

At Burcote Farm the cows are milked by a bucket type machine, the cows lying in the stalls during the winter, i.e., from Christmas to early April, but at Manor Farm a milking parlour is in use and the cows have, until recently, been out in the fields night and day. The parlour was made in part of a barn and the cows were collected in a yard outside. The latter had to be rather smaller than it should have been, because it was surrounded by other buildings. As the herd increased there was bullying by some of the older cows, especially of the heifers when they first came into the herd, and their milk yields suffered in consequence. In 1948, therefore, Mr. Farrant, Junr., decided to dehorn the whole herd. The benefits from this operation have been amazing, and it is thought that this alone has effected an increase in yield of at least 50 gallons per cow per year ; in fact, the average yield of this herd has increased in the last two years by something like 150 gallons per cow, although it is not claimed that the *whole* of this increase is due to dehorning. Other noticeable benefits are that the young cattle are much quieter, and a greater number can be kept in each yard.

The dehorning of all stock has enabled a much cheaper method of feeding to be practised. A yard has been constructed, one side of which consists of upright oak rails so arranged that they make 14 inch yokes at intervals of 2½ feet throughout the length of the yard. Each cow puts her head through a yoke to feed from a manger 2½ feet wide which also runs the whole length of the yard. The bottom of the manger consists of well-trodden straw, and this is raised by adding more straw as the yard dung accumulates. It will be seen that feeding is both economical and comparatively easy, since (1) the manger is outside the yard, (2) trailers can be drawn alongside and any type of food, including kale, can be fed.

The milking cows have three yards, each capable of holding 24 cows ; management is as follows :

(1) from December to March the cows are housed in these yards, following the afternoon milking;
(2) for the morning milking one batch is put through the bail, whilst the other two have their feed of baled hay, etc., before they are milked ;
(3) when the cows have been through the bail, they are returned to their respective yards until about 9 a.m. ;
(4) all the animals are turned out for exercise and a feed of roots and/or silage until they are brought in again for the afternoon milking.

Yards have been built for all sizes of stock down to young calves, and they are proving very successful. Not the least of the benefits derived from this yarding system is that the cattle are kept off the grassland during the winter time.

The ewe flock is composed of Clun Forest and Hampshire cross Clun ewes. Hampshire rams are used and lambing takes place in March. During the summer the flock is run on the leys. Later the lambs go on to rape and then on to beet tops in the autumn, finishing on kale and swedes. No attempt is made to push them, and they are usually sold fat during March and April when mutton prices are highest. Forty years ago there was a good-sized ewe flock on practically every suitable farm in South Oxfordshire ; today there are very few indeed, but run as they are here, i.e., more as a sideline, and as followers of the dairy herd and often eating food which would otherwise be wasted, Messrs. Farrant still find that they pay their way and help to keep up the fertility of the land.

The poultry flock of about 700 hens, Rhode Island and Leghorn X Rhode Island Red, which are bought as day-old pullets, are kept partly in fold units and partly in movable houses on the leys ; the former method, although involving more labour, is ousting the latter because the land is fertilized by the droppings so much more evenly.

Crops and Silage Plentiful supplies of dung are needed on the light land on these farms. The time taken and the cost of getting it out has militated against making large quantities but now that a tractor-operated loader and dung spreaders are being used, it is hoped to speed up the job and cut the cost. About 50 acres of potatoes and 50–60 acres of sugar beet have been grown each year ; the soil is rather too dry to make potato growing 100 per cent successful, but with the increasing quantities of dung and the ploughing out of leys, the land is improving in this respect. Sugar beet has done well, and over a number of years the crop has averaged 14 tons of washed beet per acre. A beet harvester has considerably eased the lifting of the crop during the last two seasons. The beet tops are fed to stock, the practice being to cart off half for the cattle and feed the remainder on the land by folding sheep.

A considerable area of kale is grown for the cattle, and during last winter this was folded very successfully by the cows, electrically fenced. Some 12 to 15 acres of swedes and kale are grown for the sheep, but of late years swedes have done so badly that it has been decided to abandon them and grow a bigger acreage of kale. Catch crops, such as rape and Italian ryegrass, are grown after the vetches and oats are ensiled ; and also after early harvested winter barley.

The 450–500 acres of corn crops are harvested mainly by combines, with the exception of a part of the oat crop which is cut with a binder and stacked to be threshed as required for use. So far, no great difficulty has been

experienced in satisfactorily selling the wheat and barley after harvest, but in view of the difficulties that are bound to come with the increasing number of combines and with the higher prospective prices for wheat from January onwards, silos have been ordered and will, it is hoped, be erected close to the drying plant before next harvest. The straw left by the combines is baled with an automatic baler, and the bales gathered up immediately and stacked.

Silage has been made on Burcote Farm for many years : from 1937 onwards it was made in wooden containers, but lately the pit method has been adopted and found to be more economical. Some very good silage has also been made in stacks, but Messrs. Farrant are of the opinion that to make good silage by this method the material must be young and the stack large, with a diameter of at least 9–10 yards. By using a green crop loader and elevator, the stack has proved a successful and relatively cheap method.

Farm Staff Despite the fact that Pressed Steel and the Nuffield Organization in Cowley, nearby, draw a large proportion of the male workers from the surrounding villages, Messrs. Farrant are fortunate in having a loyal and efficient staff, quite a number of whom have been with them for twenty years or more. Altogether there are thirty-eight employees, including seven lads between fifteen and twenty years of age. A noticeable feature is the keenness of some of the younger men. Some casual labour is employed for beet hoeing and potato harvesting, but efficient casual labour is not easy to obtain ; A.E.C. labour engaged on a contract basis was used for beet hoeing for several years, but on the day rate basis now in operation the cost per acre is far too great.

In conclusion, it may interest readers to know that the gross production, in terms of money, has been approximately £30 per acre during the last two or three years : Mr. Farrant states that this is perhaps low when compared with many other farms in Oxfordshire, but for this type of land it can be considered to be fairly good.

THE DAIRY SHORTHORN IN OXFORDSHIRE

ROBERT HOBBS
Kelmscott, Lechlade, Glos

ONE of the chief features of the first Royal Show at Oxford, in 1839, was the fine display of Shorthorn cattle from Thomas Bates's Kirklevington herd in Yorkshire. Their size, symmetry and quality greatly impressed landowners and farmers over a wide area, and doubtless did much to encourage the advancement and improvement of Shorthorns throughout the neighbouring counties. The thirty-one years intervening between the next visit of the Royal to Oxford, in 1870, saw the Shorthorn as the universal breed of the country, with many farmers, as well as landowners, possessing good pedigree herds of dual-purpose Shorthorn cattle, which supplied the ever-growing demand for milk in our big cities, and for calves for rearing as stores in the outlying districts. Dairy herds of British Friesians and Ayrshires were practically non-existent in Oxfordshire;

nor were there at that time a large number of pedigree Shorthorn breeders living in the county. The Kelmscott herd was founded in 1878, at which time Lord Moreton was probably the most prominent Shorthorn breeder in Oxfordshire.

Building Up On the Gloucestershire border were the well-known breeders Thomas, John, Robert and William Garne, William and Daniel Arkell, W. J. Edmonds of Southrop, and Charles Hobbs of Maiseyhampton. Thomas Garne's son George had a grand herd, largely of Booth blood, at Churchill Heath, near Kingham. The tenant to follow in this farm was Mr. Urban Rose, who founded the present Churchill herd by the purchase of two good cows from Mr. Charles Hobbs, and from which is descended the present Mr. T. R. Rose's well-known "Churchill Bessie" family.

At the dispersal sale of the Kirklevington cattle in 1850 the fifth Earl Ducie was the largest purchaser for his herd at Tortworth, Glos. He died three years later, and the Tortworth herd was sold, the 62 head averaging £150 19s. 11d. But Lord Moreton, his grandson, established another herd at Example Farm and the pastures around the mansion at Tortworth, which he held from his father, the sixth Earl Ducie. Later the herd was moved to his Oxfordshire home at Sarsden, near Chipping Norton. In 1884 a selection of Lord Moreton's cattle was sold by John Thornton and Co., at Chipping Norton Junction, but it was not until 1906 that, mainly through Lord Moreton's efforts, the Kingham Sales were started. It was at this sale that the late Frank Matthews first handled the sandglass for John Thornton and Co.

From 1906 to 1929, 107 Kingham sales were held, 11,041 head being sold at an average of over £50. In the boom years 1918, 1919, and 1920, many cows and bulls were sold at Kingham at between 400 and 1,050 guineas. The fine covered rostrum and sale-yard at The Midland Marts, Banbury, now make a more convenient site for Messrs. Thornton and Co.'s sales in this county.

A stone's throw into Warwickshire lies Brailes where, in 1856, Mr. H. J. Sheldon founded his herd, consisting entirely of Bates and Knightley blood, the majority being of the Barrington or Charmer tribes. Forty years later, in 1896, increasing age and depressed prices necessitated the sale of the herd.

Mr. R. H. Dyke, who for many years had been farm and herd manager of Brailes, having taken a small farm near Banbury, made a few purchases at the sale; one, a heifer, Duchess of Barrington 39, twin to a bull, cost him 9 guineas, and from her he bred many high-priced bulls. For some years following, his sons (Messrs. Dyke Bros.) topped the price averages of the Birmingham sales with their Barrington bulls—all of rich deep colour and superbly shown by their owners. These bulls were keenly sought after by such men as Donald McLennan, Charles Pinnell, E. N. Casares, and other exporters, to supply the increasing demand for Shorthorn beef bulls in Argentina.

The high prices for heavy fleshed bulls induced the use of extremely deep-fleshed Scottish Cruickshank bulls in many of the English herds, to the detriment of their daughters' milking qualities, and for many years dairy farmers fought shy of pedigree Shorthorn bulls.

In 1901, The Shorthorn Society authorized the offer of special prizes at shows for milking Shorthorn cows, and four years later, in 1905, the Dairy Shorthorn (Coates Herd Book) Association, was formed. Dairy Shorthorn classes were instituted at the shows, and milk yields were officially recorded.

Forty-five years of steady progress has brought the Dairy Shorthorn to the prominent position which it now holds, and, despite the fact that milk was made priority No. 1 during the war years, and that competition from dairy

breeds was greatly increased, one still finds the Dairy Shorthorn showing the largest number of entries in the cattle classes at our Royal Shows.

Oxfordshire boasts upwards of 150 members of the Shorthorn Society. Probably the oldest member is Major S. P. Yates of Sorbrook, past-President of the Society, a prominent Council member, and a most successful breeder and exhibitor.

Closely adjoining Sorbrook is Leys Farm, Great Tew, where Mr. Ralph Tustian, amongst other winners, bred two Royal Champions in Greattew Clarence II, and Greattew Waterloo, both sired by a bull of Major Yates's breeding. On the Buckinghamshire border is Scotsgrove, the home of Col. S. E. Ashton, another past-President of the Shorthorn Society, and an indefatigable worker on the Council. Now, assisted by his partner, Mr. G. Hibbert, their greatest achievement was at the London Dairy Show in 1948, when their cow Scotsgrove Musical 9 was within an ace of winning the Supreme Championship over all breeds.

Another enthusiastic breeder in this area is Dr. L. D. Jakobi. Several high-priced bulls at recent Reading sales were bred by Mr. Cyril Brown of Wootton, near Woodstock, and at a home sale in 1942 he sold 42 head to average £225 14s., 1,000 guineas being the highest price.

Few herds in England have had greater success in recent years than Mr. T. R. Rose's herd at Churchill Heath, near Kingham, one of the oldest in the county. This herd shows remarkable uniformity in type and true Shorthorn character. A photograph of Churchill Primrose 20 is reproduced on p. vii of the art inset.

Islip Pedigree Breeding Stock farms have established a herd of Dairy Shorthorns quite recently. No cost has been spared in the purchase of high-class sires ; nor in the layout of the excellent yards, boxes, sheds and general equipment.

Kelmscott Herd Kelmscott is situated on the Upper Thames at the extreme south-west corner of the county, adjoining Gloucestershire and Berkshire, with the Wiltshire boundary less than a mile away. The herd of approximately 240 head includes 60 to 70 cows in milk. The large, flat, open fields are admirably suited for up-to-date mechanical cultivation, and ley farming in general. The light gravel soil enables the dairy herd to lie out day and night throughout the year.

Generous top dressings and controlled grazing, together with an early bite in spring off the winter oats and early-sown autumn wheat, ensures grazing for at least seven months in the year, whilst the early cutting of some forward leys and a big acreage of lucerne and cocksfoot mixture for silage permits a quick second growth to provide grass during the usually dry periods from mid-July to September.

Run on a strictly commercial basis, the object is to feed the stock as far as possible on home-grown foods. The milk yields are good but not abnormal. National Milk Records for the year ended September 29, 1949, show an average yield of 8,730 lb. for 55 cows and 7,257 lb. for 21 heifers. Kelmscott Melody 107, headed the County Shorthorn list for individual yields in milk and butter fat. In 305 days she gave 20,432 lb. of milk and 701 lb. butter fat. She ran with the dairy herd but was milked three times daily and had extra feed.

Kelmscott cattle have had a long run of show successes : the 1909 Royal Show saw Kelmscott Primual 70 win the first Royal Championship ; in the 1949 Royal all three Group Challenge Cups were won by home-bred Kelmscott exhibits—the Breeders' Group Challenge Cup for the thirteenth time. The most successful Home sale was in 1918, when 68 head averaged £231 8s.8d.

Great care is taken in the selection of the sires purchased. Line breeding has been practised for many years, and the majority of the herd bulls are home-bred, hence the number of bulls (never less than seven or eight) required for home use. As is usual in Oxfordshire, the bull calves not kept for breeding are now reared as steers, and when fit to grade they fully confirm the capacity of the Dairy Shorthorn for both meat and milk production.

With so many good herds in the county, Oxfordshire breeders may be relied upon to uphold the reputation of the breed at the third Oxford Royal Show.

Some of the Kelmscott herd are shown on p. vi of the art inset.

OXFORD DOWN SHEEP

HUGH C. STILGOE
Banbury, Oxfordshire

IT is now rather more than 120 years since the establishment of the Oxford Down Breed. About 1820–1825 Mr. John Twynham of Whitchurch, Hampshire endeavoured to produce a sheep which combined the good qualities of the large frame and fat nature of the Longwool with the early maturity and lean producing qualities of the Down breeds. For this purpose he chose the combination of the long-woolled Cotswold and the then comparatively new breed of Hampshire Downs. He crossed a Hampshire Down ram with the Cotswold ewes and in the course of time established a valuable flock.

It is interesting to note that this early breeder was not only a pioneer of the breed but a pioneer of the great present-day science of advertising, and he wrote very largely on the qualities of this new breed of sheep. He challenged other breeders to submit twenty-five wether lambs drawn from any flock of up to 300 ewes to an impartial trial for nine months for the purpose of testing the value in both mutton and wool qualities of the different breeds; and he proposed to stake £25 on the issue, believing the Oxford Down would beat all comers. Although the challenge does not appear to have been accepted, it doubtless did much to popularize the new breed.

About 1830 several other breeders appreciated the success which Mr. Twynham had achieved and set out to follow his example and thus founded what they termed the Oxford Down sheep. It is possible, indeed very probable, that a few of them tried the experiment of introducing a little Southdown blood, but the breed owes its success chiefly to the Hampshire and Cotswold breeds.

An Oxford ram made its first appearance in the Royal Showyard at Windsor in 1851; at Warwick, just nine years afterwards, there were no less than thirty-seven entries, and in 1862 the Royal Agricultural Society apportioned a separate class for Oxford Downs. In the same year the Smithfield Club followed its example. Today the Oxford Down is represented at all the principal shows in England, Scotland and Ireland, and pure-bred flocks are to be found as far north as Aberdeenshire, on the

extreme north-east coast of Norfolk, in Monmouthshire in the west, and as far sou'h as Cornwall.

The breed's popularity has been maintained for the better part of fifty years, for we read in the very early years of this century this description by an eminent breeder, the late Mr. John Tredwell :

> The Oxford Down can be sold fat when they are small weights or fed on until they attain any desired weight, they are equally suitable for an arable or grass farm and are most profitable; the mutton is not only lean but of very good flavour; they are a splendid sheep for crossing, as the growing demand from Scotland would indicate; the wool is not only good in quality but much in quantity and the breed is very hardy.

These essential qualities of the past are preserved in the breed today, and modern requirements have brought even greater quality to the fore, as was amply indicated in the Carcase Exhibition at the Royal Show at Shrewsbury in 1949, where the exhibits from the breed showed to great advantage.

Probably the most popular cross for the Oxford Down ram is on the Border-Leicester Cheviot ewe, but it may be used with marked success on the great majority of both grass and Down breeds. The theory that it will not spread over an open field, due to the majority of the ram-breeding flock being close folded, is quite erroneous ; during the spring of 1950 I grazed almost the whole of my wheat with ewes and lambs, all of which spread over the field evenly to the great benefit of themselves and the wheat crop. Not only does this grazing ensure for all breeds of sheep an adequate supply of food during what is sometimes a lean period, but there is no doubt that in our efforts to achieve a wheat target the use of the golden hoof is well-nigh indispensable.

Management of Ram-Breeding Flock

A description of the management of my own pedigree Oxford Down ram-breeding flock from the beginning of July last to date may be of interest to sheep breeders. At that time the whole of the breeding ewes were grazing on permanent pastures, and they continued to be maintained on them until coming to the pen for lambing in January. The ram lambs were penned on aftermath clovers and on a crop of marrowstem kale until they were sold at the autumn sales, and while on these crops they naturally received such rations of concentrated food as the Ministry allowed for ram-breeding flocks.

The ewe lambs, however, by the end of July were turned on to the aftermath of a pasture of S.23 ryegrass, from which the crop had been harvested for seed production. They remained on this pasture until the end of September. At this time there was a considerable rainfall, with the result that much shed corn grew on the stubbles and on this the ewe lambs continued to live until the early part of December. They were then folded on some 6 acres of swedes which, due to the drought, produced only a very small crop. Having completed the penning of the swedes in early January, they were then moved to the neighbour's 10-acre field of Brussels sprouts, from which all the saleable sprouts and tops had been removed, and this kept them, with the addition of hay, until about the second week in February. They were then returned to the farm to graze on a field of savoys from which all the saleable greens had been sold. They remained on this field only until the land carrying the winter wheat was sufficiently dry not to poach, and were then turned out on to a field of wheat, where they received no additional food at all. On April 6, fourteen of the smallest of them were graded at an average of 72 lb. dead weight ; the remainder, being retained for stock and pedigree sales, were kept on the wheat until the end of April and thereafter on permanent pasture.

This is a fitting illustration of the economical way in which sheep can be maintained, for apart from the crop of swedes and the hay which they consumed, the remainder of the food could not have been used profitably in any other way.

Taking the maintenance of the breeding flock, the ewes were brought from the permanent pasture to the lambing pens in early January, and as soon as they could be turned from the pen the ewes and lambs were folded on a crop of kohlrabi, which carried them through January and early February. From this crop they went on to the savoy field mentioned above until the end of February. Thereafter until the middle of April they, like the ewe hoggetts, were grazing the winter wheat. They then returned to a very few acres of thousandhead kale, which carried them until the latter end of the month, and thence to a crop of single-cut cowgrass intended for seed production, since it has been found very beneficial to graze off the crop in late April or early May. Having finished this, they were then penned first on trefoil and later on broad red clover or a few acres of oats and vetches. They will be kept on the latter until the end of June, by which time the aftermath clovers will again be ready for folding ; and so the year's cycle is completed. Needless to say, the lambs are weaned about the middle of May and the stock ewes return to the permanent pasture.

Apart from its success in the home market, the Oxford Down has done much to earn foreign currency in the post-war years ; exports have been made to Switzerland, France, Denmark, Sweden, and the Argentine, and there is considerable inquiry from Canada and the United States.

A High Breeding Standard Perhaps a few words on the founding of the Oxford Down Sheep Breeders' Association may be a fitting conclusion to this article. At a meeting of breeders held in 1857 the title of Oxfordshire Downs was adopted, and this was subsequently shortened for convenience to Oxford Downs. We do not, however, hear any more of Meetings of Breeders until the year 1888, when the Oxford Down Sheep Breeders' Association was formally called into existence at a well attended meeting in Oxford on August 8 of that year. Since then the Association has issued a Flock Book each year ; this year's will be the sixty-second volume. The official description of the Oxford Down in this publication is as follows :

> The Oxford Down has a bold masculine head, well set on a strong neck, with poll well covered with wool, and adorned by a "top knot". The face a uniform dark colour, the ears of good length, the shoulder broad, with a broad breast, well forward. A full level back, the ribs well sprung, the barrell deep, thick and long, with straight underline. The legs are short and dark coloured, standing square and well apart. The mutton is firm, lean and of excellent quality. The whole body is covered with wool of close texture, good length, and fine quality.

Such is the standard set by the Association and one which breeders may well strive to maintain.

One last word of tribute to the fertilizing value of the sheep and to a great sheep breeder and an excellent farmer : I have just finished the threshing of the 1949 wheat harvest on the farm occupied by my father, H. W. Stilgoe, who died on July 3, 1949, and was therefore responsible for all except the harvesting of this crop ; the average yield of wheat over the whole farm in 1949 was 6½ quarters per acre, which must be acknowledged as a very satisfactory figure, and the greatest testimonial to the golden hoof in the hands of the expert.

Photo: Lago Photo

Milking time in the Cotswold village of Upper Slaughter.

Farm buildings at Ablington

[Two of the illustrations from Robert Herrick's book *The Cotswolds* reviewed on p. 196]

Craftsmanship in stone. An upland wall near Eastington

Southdowns at Andoversford, Glos.

Photo: Lucy Pringle

De-horned Ayrshire heifers nr. Sevenhampton, Glos.

Otmoor from Beckley Hill

OXFO

Store cattle and sheep grazing a new ley on the banks of the Thame

Ayrshires grazing a reseeded bank at Swinbrook.
Formerly this was nothing more or less than a sheep run.

SHIRE

Sheep grazing after dairy cows a ley on Mr. Farrant's farm
at Burcote (see article on p. 165).

A promising bunch of 2-year-old heifers.

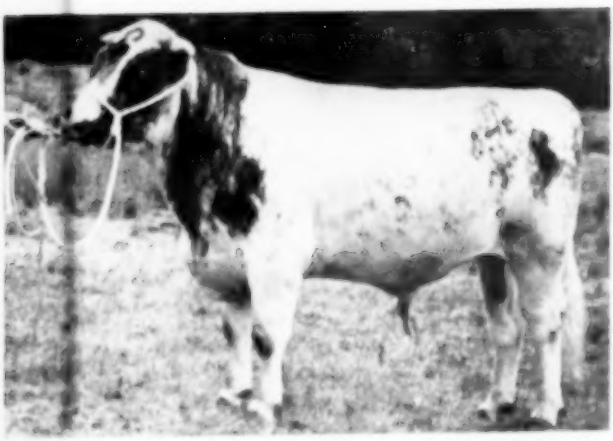


Photo: C. Hourgood

Kelmscott Prelate 31. Awarded 1st prize at the 1949 Royal Show in class for bulls born in 1947.

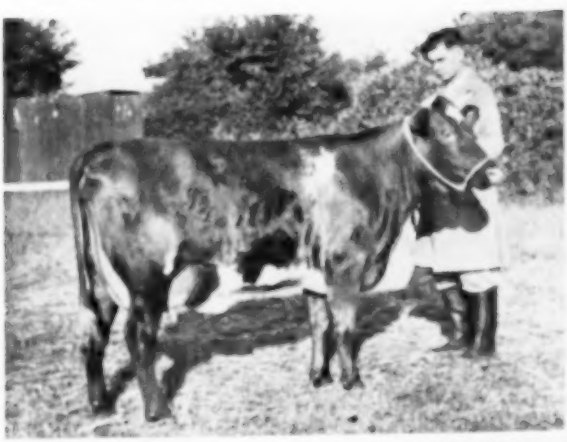
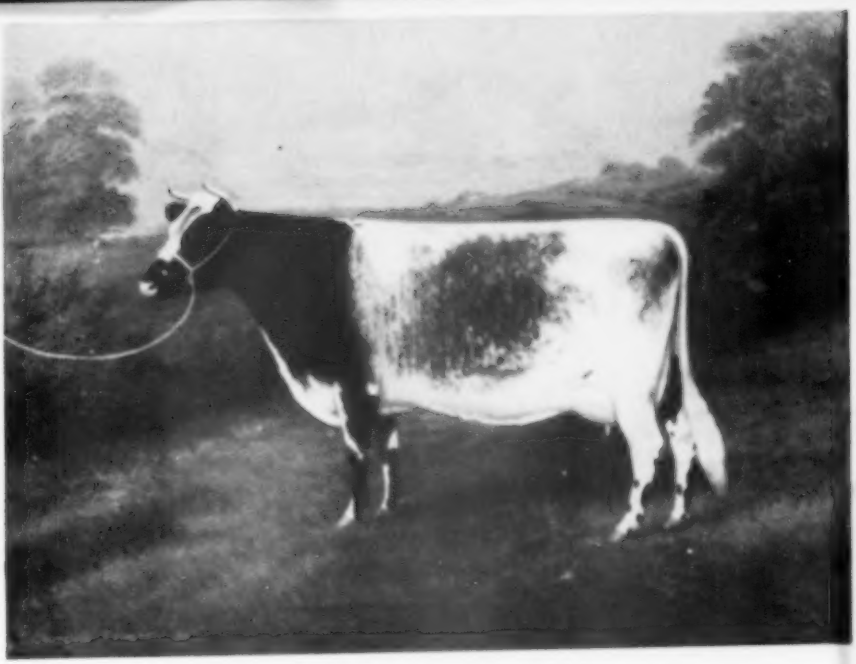
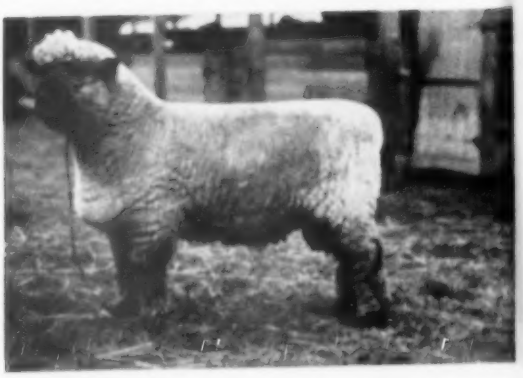


Photo: C. Hourgood

Kelmscott Solo 169. Awarded 1st prize at the 1949 Royal Show in the class for heifers in milk born in or after 1946. She gave 10,379 lb. milk in 294 days with her first calf.



Churchill Primrose 20, a prize-winning Shorthorn Dairy cow bred and exhibited by Mr. T. R. Rose, Kingham, Oxon.

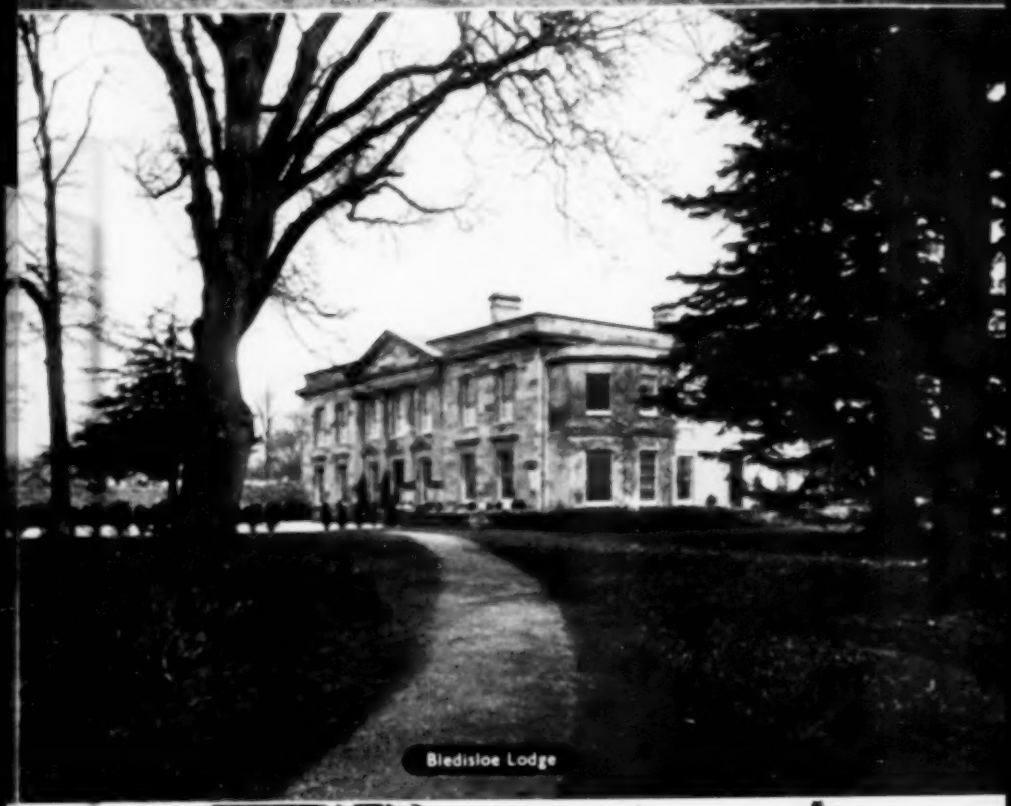


Oxford Down shearling ram, winner of 1st prize and Supreme Champion at the Oxford County Show, Thame. Bred and exhibited by Mr. H. W. Stilgoe

Photo: C. Hourgrad

Pen of three Oxford Down Shearling ewes shown by Mr. H. W. Stilgoe at the 1930 Royal Show. 1st prize and Champion and Supreme Champion.

Photo: Sport & General



Bledisloe Lodge

ROYAL
AGRICULTURAL
COLLEGE,
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Trent Lodge

AGRICULTURAL TEACHING AND RESEARCH IN THE UNIVERSITY OF OXFORD

PROFESSOR G. E. BLACKMAN
Department of Agriculture, Oxford

IN the University there are two institutions which are directly concerned with the training of students in agriculture—the Department of Agriculture, originally the School of Rural Economy, and the Institute for Research in Agricultural Economics. Although the Sibthorpian Professorship of Rural Economy dates from 1796, the Department did not come into being until 1908 ; the Institute was established in 1913.

Department of Agriculture The change in name to the Department of Agriculture came in 1945 with the reopening of the School, which had been closed during the war, and had the advantage that it did indicate the future fields of interest. The Institute was to be concerned with the economics of agriculture, and the Department with the natural sciences in their application to agriculture. This distinction is double-edged : the applications of science involve economic considerations, but many applications of economics and agriculture involve considerations of science and practice in the industry. Indeed, in the regulations for the Honour School of Agriculture it is laid down that "the subject shall be the study of agriculture in its historical, economic and scientific aspects". All students are required to take compulsory papers, covering agricultural history and economics, crop production, animal husbandry and soil management. With this common background of basic knowledge, some specialization is allowed, and selection can be made from a number of optional papers. Students can either concentrate on the economics side or on agricultural science, with some choice in the emphasis laid on plants, animals or soils.

As a matter of policy, the lectures and courses of instruction for the degree course stress principles rather than practice, and the general aim is to assess the major factors which govern the patterns of agriculture in different parts of the world and the systems of crop and animal production practised in widely different climates. So that the teaching of agriculture abroad, and more particularly in the Colonies, should not lack reality, preference has been given in the staff appointments to those who have served abroad, either in research stations or in a technical capacity. In addition, every endeavour is made for members of the staff to maintain direct contact with recent developments. For example, in the last twelve months, different members of the Department have either visited or have been on missions to Malaya, East Africa, the Gold Coast, and the West Indies.

Some may feel that this emphasis on world agriculture rather than British agriculture is too great, but it must not be forgotten that students come to Oxford from many parts of the world and that with the intensification of Colonial development there is an urgent need for graduates both in Government service and industry abroad. Moreover, probationers to the Colonial Service receive part of their training at Oxford, while there are also refresher courses for those returning to England after a period of service.

Research Fields To maintain the interest of students, no one will deny that teaching should go hand in hand with active research, and the Department is fortunate in receiving large grants from the Agricultural Research Council for several investigations.

Selective Herbicides. Of these researches, perhaps those which are best known to the farmer concern the development of selective herbicides. These experiments are a continuation of the investigations started early in the war, when the value of the synthetic growth-regulating substances and the yellow dyestuff, dinitro-ortho-cresol, for weed control in cereals was first demonstrated. Although these experiments on cereals have been in progress for eight years, there are still many problems to solve.

Since the team engaged on this type of research came to Oxford in 1945, methods have been worked out for the eradication of hoary pepperwort, for the control of weeds in linseed and flax with the growth-regulating substances, and for the use of light mineral oils in carrots and the like. In the near future it is hoped that new techniques will have been perfected for weed eradication in peas, lucerne, dredge corn and permanent grassland, while the possibilities of killing selectively weeds in many other crops are being explored.

Although from the practical viewpoint, the way in which the weed, and not the crop, is killed is unimportant, in the development of new compounds and new techniques such information is the key to the future. In consequence, a considerable proportion of the research relates to fundamental studies of the principles of toxicity.

Oilseed Crops. Another field of investigation which likewise had its beginning early in the war has been concerned with the development of oilseed and other crops in Great Britain. Of these, linseed (in terms of acreage) has gone farthest, has received a welcome from some and a mixed reception from others, particularly those who have found the crop difficult to harvest. Experiments are therefore still proceeding to select varieties which combine with increased seed production, earliness, evenness of ripening and ease of harvesting. Another crop, of which fields have probably been seen by most farmers in the south and east of England, is the sunflower, and with the selection of the so-called dwarf varieties, it has been demonstrated that in the drier areas the plants can be harvested with a suitably modified combine. So far the acreage grown in England has been small, but it may be of interest to record that these dwarf varieties—Pole Star, Jupiter and Mars—are now being grown extensively in other parts of the world, more particularly in the Groundnut Scheme and South Africa.

In 1945, research was started on the oilseed poppy, and the results to date point to the prospect of an oilseed crop which does not present difficulties at harvesting. No final judgment can be passed until the experiences of farmers growing this year some 300 acres of the two selected early varieties have been analysed, and the possibilities of using the crop residues for other purposes have been more fully defined.

Not all the other potential crops examined have given such positive results. Although some sixty varieties of soya beans have been tested, none of the varieties which are early enough to ripen lends itself to mechanical harvesting. A search for a millet which combines rapid growth in the seedling stage, high yield and early ripening has been fruitless. On the other hand, there are several hybrid maizes originating from the United States and Canada which are eminently suitable for silage production, but in developmental work on farms there have been rueful encounters with rooks which in the seedbed have frequently eaten their weight in gold of this expensive seed.

Field Beans. Attention has by no means been confined to new crops, for the factors underlying the falling productivity of the field bean are being examined. As a first step, a survey of fields in the neighbourhood of Oxford

has been carried out and a programme of field experiments started. Other investigations, which have an indirect bearing on beans, relate to studies of the incidence and extent of nodulation in the field of leguminous crops, while there is a further indirect linkage in the research on the special populations of micro-organisms in the immediate vicinity of the root hairs of different species and their bearing on crop production.

Radioactivity and Plant Nutrition. Another relatively new field of research which is being investigated by a team is the use of radioactive isotopes in the study of plant nutrition. With the developments in atomic energy, widespread interest has been taken in the possible values of these materials in biological research, and a number of investigators have studied the possibilities of radioactive phosphorus in elucidating phosphorus utilization. From the present research it is clear that the quantities of radioactive phosphorus which has hitherto been regarded as harmless to the plant do in fact cause injury as a result of the emission of radiation. This result is brought about by the accumulation of phosphorus in high concentrations in the actively growing tissues, which are also particularly susceptible to radiation damage.

These findings have shown that radioactive isotopes are of less value than hitherto anticipated for field experiments of long duration. However, under carefully controlled conditions the technique is yielding information which could not be obtained in any other way, both on the absorption and utilization of phosphorus by the plant and the fate of phosphorus when phosphates are added to the soil. Because of the sensitivity of the method, it is possible to study the absorption of phosphorus from solutions containing one part in a thousand million—that is, the method is about one hundred times more sensitive than an ordinary chemical method.

Because the emission from radioactive isotopes can affect a photographic emulsion in the same way as X-rays, it is possible to obtain radio-autographs which show the distribution of isotopes within the tissues, even when the pieces of tissue are less than a hundredth of an inch long. Special techniques are being evolved to improve the accuracy and definition of such radio-autographs.

In the future it is proposed to expand this research to other isotopes so that other fundamental studies of plant nutrition and the movement of selective herbicides can be undertaken.

Soil Studies. The Soil Science Laboratory, which is a part of the Department of Agriculture, apart from giving instruction to students studying agriculture, is also responsible for the training of students whose interests include a study of the soil. In the past, the Laboratory has been concerned with methods of soil survey and classification. In the course of this work a collection has been and is still being built up of the principal British soil types, together with examples from overseas, particularly from Central Africa. This collection is unique in this country, for the soils in the museum collection are as near as it is possible to their natural conditions. Unfortunately, the present accommodation is not large enough to display all the examples, but it is hoped that a larger room will be available within a relatively short period.

An important aspect of this work has been the development of a method for assessing in simple numerical terms the effects on crop yield of those soil properties which can be recognized by an experienced soil surveyor and graded by hand and eye. Recently, the interests have been expanded in two directions. On the field side, responsibility is taken for organizing the deep ploughing experiments now being carried out by the N.A.A.S. all over the country. The object of these experiments is to determine the effects

of depth of ploughing and subsoiling, both on crop yields and on the general management of the land. On the laboratory side, one group of problems under investigation relates to the role of organic matter or humus in building up soil tilth, and another is concerned with the direct measurement of the concentrations of the principal nutrients and toxic elements in the soil in its natural condition.

Lastly, it will have been noted that no mention of research on animals has been made, but this lack of balance will be rectified when the Department takes over this autumn a 350-acre farm on the outskirts of Oxford and develops it as a University Field Station. This Station will not only meet the needs of students, but the extra laboratories will relieve the pressure on the available accommodation in Oxford, which, owing to the increased numbers of both research workers and students, will still be restricted when the Department of Forestry moves to its new buildings and the Department of Agriculture takes over the whole of the existing forestry-agriculture block.

Institute for Research in Agricultural Economics

The Institute for Research in Agricultural Economics was established in 1913, as one of the series of institutes for research in agricultural science in the process of establishment by the Development Commission and the Board of Agriculture (as it was then) about that time. Work began immediately, but World War I retarded progress in staffing and organization, and it was not until 1919 that the Director was able to maintain a permanent staff of scientific workers.

The Institute was designed for the conduct of research into the economic structure and functions of agriculture. Between the two wars, work was done in agricultural history and policy ; accounts and costings, economic surveys of organization and conditions, both by area and subject ; marketing surveys and price and consumption studies ; and in rural industrial and social surveys. A special series of studies was made in " progress in English farming systems ". Between 1934 and 1939 a review of economic changes and conditions, *The Agricultural Register*, was published annually. A periodical which began in 1928 as *Occasional Notes on Agricultural Economics*, and became *The Farm Economist* in 1933, is still published three times a year. Some preparations have also been made for a revival of the *Register*.

From 1913 until 1945 Dr. C. S. Orwin directed the work of the Institute under its original constitution. In preparation for return to full activity after the end of the war, the University in 1945 made a new statute bringing the Institute more closely within the University organization. Dr. Orwin was succeeded by the present Director, Mr. Arthur W. Ashby, C.B.E., M.A., in January, 1946. While the primary and main function is still " the study of the economics of production, distribution and consumption of agricultural products and of rural industrial conditions," the staff is now called upon for some teaching of agricultural economics in the Honour School of Agriculture. As a research organization, however, the Institute is particularly concerned with the training of advanced students. Since 1947 there has been provision for a (graduate) Diploma in Agricultural Economics, which gives opportunity for specialization in the study of farm organization and management, or other branches of the general subject. Students pursuing research for advanced degrees, B.Litt. or D.Phil., since 1946, have been accepted from Great Britain, U.S.A., Canada, Australia, New Zealand, India and Pakistan, Syria, Belgium and Poland, with other advanced students from Hungary, Turkey and Finland. Agricultural and Co-operative Officers on leave or study-leave have attended the Institute for short periods of training, and

members of the staff have been on special research or advisory missions to India, Africa, U.S.A. and Canada.

Research Organization. For research, the Institute is organized to deal with questions of farm organization and management ; of marketing, supplies and prices ; of the economics of land use, ownership and related matters ; and with questions of rural social organization which impinge upon agricultural economics. But with changes in the structure and equipment of agriculture, and in its economic environment, and sometimes in specific economic or social relationships, special research projects are required and undertaken. Since 1946, a survey of country town industries in the south-western counties of England has been completed. In 1947 special research was started, with the support of the Rockefeller Foundation, into the economic and social relationships between agriculture and industry, with particular reference to conditions in the United Kingdom, Eire, U.S.A., Canada, Sweden, and the Netherlands. The economic stages of this work are expected to be completed during this year. In the meantime a study of *Agriculture and Economic Progress* by E. M. Ojala, D.Phil. (now of New Zealand) is in the press. This work will show for the first time, in respect of several countries, the contribution of agriculture to national income, and agriculture's share in national income relative to population.

Recent and current projects in investigation and research cover a wide field. In the general economics of the industry they include a study of cost of agricultural education and research in relation to output ; rents and prices of agricultural land ; output and efficiency of the national agricultural organization ; and labour supplies and requirements. In the sphere of farm organization they include an advanced study of efficiency of farms in relation to scale (or size) of business ; efficiency of labour and incentive payments ; mechanization with reference to working efficiency and capitalization ; systems, costs and conditions of economy in milk production ; economics of fruit farming ; methods and costs of herbage fodder preservation. In the field of marketing, a continuous review of supplies and prices of bacon and pig-meat has been maintained ; and study of methods and costs of marketing eggs, and another of trading margins in the marketing and sale of milk have been completed. A review of organization, operation and trading results of farmers' co-operative societies in England is being maintained. The major work in rural social organization is an economic and social survey, covering factors " from soils to social relationships," of a rural area in South Oxfordshire. Statistical reviews of some current conditions in agriculture are published in *The Farm Economist*.

The Institute maintains contacts with a large number of agriculturists. Active co-operators receive selected issues of Institute publications. Members of the staff give occasional lectures or addresses to organized groups of farmers as well as to groups interested in research and education. Many inquiries and requests for advice are received and dealt with in so far as resources permit. Some inquiries are referred to Provincial Agricultural Economics centres.

The Institute is fortunate in the possession of a collection of engravings and prints of portraits of " agricultural improvers," of many famous animals, and of agricultural events of the eighteenth and early nineteenth centuries. Amongst them are an interesting set of portraits of the now almost extinct breed of Longhorn cattle, a portrait of the Shorthorn bull " Patriot" by Thomas Weaver (1774-1844), another of "Two Pounder,"a famous improved Leicestershire ram. The whole collection offers valuable opportunities for the study of progress in improvement of livestock, particularly cattle.

FARM BUILDINGS IN THE COTSWOLDS

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STONE is a traditional building material in many parts of England, particularly in the broad belt of country overlying the oolitic limestone rocks which extends from the coast of Dorset to the coast of Yorkshire. The limestone buildings of the Cotswold Hills—that is, the area lying between Wooton-under-Edge in the south and Chipping Campden some 40 to 50 miles to the north—have, through the use of stone, achieved a reputation of scenic beauty above that of many other areas where stone buildings are common. There are many reasons for this.

From the earliest times the Cotswolds have been farmed for their sheep, and English wool, especially that from the Cotswolds, came to acquire during the Middle Ages a world-wide fame, bringing in its train prosperity and wealth to the "woolmen" and better conditions for their workers. With increasing prosperity, merchants and farmers commissioned local masons and craftsmen to build better houses for themselves and cottages for their men, and the more pious and munificent of them endowed churches and other public buildings.

Craftsmanship in Stone With unlimited supplies of building stone available within a few inches of the surface, it is not surprising that a local style of architecture soon developed—a style which is never pretentious but is essentially domestic and homely, being based on tradition handed down through generations of village craftsmen. Most of the domestic buildings now surviving belong to the period between 1580 and 1690, and it is between these dates that such well-known Cotswold villages as Bibury, the Slaughters and Northleach sprang up. Farm buildings generally followed after, with the possible exception of many of the barns, since enclosure and the bringing into arable cultivation of the waste lands used for sheep grazing came late in the Cotswolds. Arthur Young, for example, riding over the Cotswolds in 1773 wrote of them : "Enclosing by no means flourishes, for from Tetsworth to Oxford enclosures are scarce and from thence to Northleach few or none." Similarly, Thomas Rudge, in his report of 1807 to the Board of Agriculture, shows that enclosure on any scale was only just starting.

As the need for farm buildings developed, local craftsmen showed the same skill in their employment of stone, with the restrained use of much the same decorative effect as in their domestic buildings, until soon after the middle of the nineteenth century, when farming in the Cotswolds suffered a depression as a result of competition from overseas. The soil of the Cotswolds, not being naturally of the most fertile, farmers and landowners were severely affected. Unwilling and unable to risk further capital, the construction of new farm buildings virtually ceased, and apart from the adaptation of existing buildings in an attempt to meet changing needs, there has been little building on any scale in the Cotswolds over the last 70 to 80 years. This cessation of new building and the natural durability of the well-constructed stone buildings, though agriculturally to be deplored, has, from the scenic point of view, been a blessing in disguise, since it has meant few incursions of more modern buildings and materials out of harmony with the tradition of stone. In addition, the geographical situation of the Cotswolds, away from the large industrial centres and lying mostly between 600 and 700 feet

above sea level, being what Arthur Young calls " a bleak unpleasant country," has not attracted urban development and the introduction of alien buildings.

Although at first sight the visitor is struck with the uniformity of the grey lichen-encrusted buildings, a closer inspection reveals many local differences, since the stone for the walling and roofs was obtained from innumerable small quarries, or " quars " as they are called locally, close to the villages in which most of the farmhouses are set, and there are fairly wide geological variations in an area the size of the Cotswolds. As a building material the limestone is soft when first quarried and easily worked, but hardens with exposure to become an excellent weather stone for both roofs and walls. In the north of the Cotswolds much of the limestone used for building, normally grey in colour, becomes a golden brown derived from the ironstone : the best known of the quarries being at Hornton, lying just outside the Cotswolds, from which the stone comes in large blocks. Elsewhere building stone is mainly of inferior and great oolite, the inferior being generally darker and quarried in smaller sizes than the great oolite, which comes to the surface farther north and with a more yellowish tinge. The best known quarries of the great oolite are those at Taynton and Barrington to the north of Burford, and stone from here has been used as far afield as St. Paul's and Windsor Castle. A coarser, reddish limestone, derived from the cornbrash, is sometimes used for building along the south-west edge of the Cotswolds, but mostly for field walls.

The stone walls of the farm buildings are generally thick, not less than 18 inches, and often laid with little or no mortar, their strength being derived from the mason's skill in fitting the stones together. The centre of the wall is usually filled with smaller stones. In districts where the stone is not found in blocks but comes in thin layers it is laid in thin courses from 2 to 6 inches thick, much as it comes from the quarry, with larger blocks of dressed stone around the doors and windows. Where the stone is obtained in blocks it is sometimes laid with the blocks in regular courses and sometimes as random rubble or coursed rubble. The surface of the stonework is left rough as it comes from the quarry, and there is no special cutting or rubbing to obtain a smooth and even surface. Because timber was relatively scarce, windows, when provided, were almost always stone mullioned and if glazed were filled with lead lattice panes. The older buildings are often without windows, light and air being able to penetrate only through narrow slits in the walls or occasional honeycombed holes.

In two respects affecting the stability of farm buildings the old craftsmen have been found wanting. Many farm buildings were put straight on to the turf with little or no foundations, and no guttering or other means of disposing of rainwater clear of the walls was provided. The effect of the penetration of rain and frost or subsidence or settlement of the soil has sometimes been disastrous to walls, which at the best of times lack cohesion through their method of construction, and this is the reason why buttresses are a common sight in this part of the country.

Local stone is also the most popular roofing material, since a particular formation of the limestone, scattered over the Cotswolds, provides stone which, after exposure to the frost, splits easily into thin layers, hard, weather-resisting and without flaws. Thatch is also used, but principally on the west side of the hills, where the influence of the Vale of Gloucester asserts itself. The best known of the quarries producing stone slates, now unfortunately closed, were at Stonesfield, near Woodstock, Eyford, near the Slaughters, Guiting and Bibury. These stone slates are smaller, thicker and have much more uneven surfaces than the ubiquitous Welsh slate. Being heavy, they require substantial roof timbers, and oak has always been used both for the

main timbers and riven for the battens, though it is relatively costly in the Cotswolds—a beechwood country. Rudge, for example, reported the cost in 1807 to be as much as 3s. per cubic foot. The slates, too, vary in size, and they are hung graduated in thickness and size from the eaves to the ridge, where the smallest and thinnest are placed. The pitch of the roofs is steep, generally 50 to 55 degrees, since experience has shown this to be necessary if the smaller and thinner slates are to keep out the wet. The aspirations to social dignity in the naming of Welsh slates according to size, from the "Queen," the largest, down through "Princess," "Countess," etc., to the "Lady," for the smallest (reputed to have originated in the 1750s from General Warburton, the aristocratic owner of the Penrhyn quarries) are not emulated by Cotswold slaters, who favour more homely names such as long and short "Wivetts," "Becks," "Bachelors," "Hautboys," and "Coxs." The slates are hung either by square oak pegs driven into holes in the slates or are nailed by brass or copper nails, other materials being corroded by the oak battens. The cresting of the ridge is also of local stone, sawn from the solid block.

Farm buildings should, of course, be considered primarily for their suitability to the system of farming they are intended to serve. It has already been mentioned that in the past the economy of the hills was based on sheep grazing first on the open fields, and later, when enclosure took place, on the arable fields, but sheep required little in the way of farm buildings. Pens or simple yards used at lambing time or for bad winters are usually sufficient. Before the enclosures barns provided storage for the small quantity of corn which was grown and space for threshing. As enclosures took place at the beginning of the nineteenth century, and arable crops became important, more buildings had to be provided. Threshed corn was often stored in granaries on an upper floor above the wagon and implement shed. Stabling, too, had to be provided for horses and oxen; ox teams were used until modern times, as evidence R. Anderson, writing in the *Journal of the R.A.S.E.* for 1913, who reported that ox teams were still at work and that horses were fed in one long stable, being tied up close together without divisions. Until about the middle of the century sheep continued to be the only livestock. J. Caird, Commissioner of *The Times*, writing in 1850, records that a breeding flock of Cotswold sheep was kept on each farm, and it was reckoned a very poor farm that could not support one sheep to the acre. He mentions that very few cattle were fed, but that the practice had just started of rearing heifer calves bought from farms in dairying districts, where they were sold back again when three years old; they were generally tied up in open sheds.

There are various reasons why livestock other than sheep came late to the Cotswolds. The hills were always short of water, since it drains away quickly to the valleys where the farmsteads were generally placed, often at some distance from the land they served. The roots which were grown were required for the sheep—so necessary for consolidating the loose, porous soil—and little was available for fattening cattle. Permanent pastures, too, were not of a quality to fatten stock, and lack of transport militated against milk selling. The only additions which the rearing of cattle, both dairying and beef, brought to the farmstead were an open yard or two with a range of shelter sheds. This gradual extension of the farmstead to meet increasing needs has often led to a jumble of buildings which are badly arranged for working and wasteful of labour, though these considerations were relatively unimportant in the 1850s, when the labourer's wages were 6s. to 7s. per week and a Cotswold teg or yearling fetched 40s. There were a few areas, particularly round Dursley, Stroud, and Tetbury, where the land was of better quality, lying along well-populated valleys and, since arable cultivation was impossible because the land was too steep, dairying with some fattening has

always been popular. Cowhouses are, therefore, generally found, though now often badly in need of modernization.

In the last seventy or eighty years, with arable and sheep farming on the decline—the sheep population (in Gloucestershire) declined from about 500,000 in 1870, to 150,000 in 1949—and with improvement in communications dairying has become more widespread in the Cotswolds.

Old Buildings in a New Setting

How far farm buildings in the Cotswolds can be modernized and extended to meet the requirements of modern farming without seriously affecting the old tradition of stone building it is difficult to see. With the long decline in building in the Cotswolds, skilled masons have disappeared, and stone, besides being no longer the cheapest local building material, is unsuitable for such buildings as Dutch barns, of which many are required. It is difficult and expensive to increase the light and ventilation in the old stone buildings to the standards now required for housing livestock, and the insertion of larger windows and ventilators in the old stone walls and roofs can present many problems. Repairs can also be expensive, particularly to roofs which are worn out ; stone slates are difficult and costly to obtain, though they can sometimes be salved from a disused building for the repair of other buildings. The alternatives which it is hoped will be used in the less prominent positions are asbestos cement sheeting, with which the old roof timbers can often be re-used, and special concrete tiles matching in colour the stone slates.

For the farmer who is turning to dairying or improving his milking buildings there are various solutions—from the movable bail on farms where there is adequate water supply to the fields (an improvement which has come to many Cotswold farms during the last ten years) to the milking parlour with yards and cowhouses. The parlour-and-yard system often reduces costs, since the old rearing yards with shelter buildings can be very suitable, particularly with some adjustment in the feeding arrangement ; and parlours, being narrow, can be fitted into such buildings as former stables or ranges of boxes.

If, however, the yards are not required for dairy cows, they can be used for other stock such as pigs and poultry, which modern practice shows will thrive in yards. In the past pigs have not been kept to any great extent in the Cotswolds, so that there are not many buildings designed for pigs.

On the arable side the large fields are particularly suited to a high degree of mechanization. But existing implement sheds are generally far too small for modern machinery, and in fact the only buildings large enough to be worth considering for adaptation are the barns, and these are not ideal for the purpose, though they can make excellent workshops. New implement sheds are generally to be preferred, and of new materials concrete blocks made locally can be inoffensive to the eye.

If combine harvesters are used and a grain drier is needed, it may be possible to house the driers in the existing barn, though care should be taken, of course, over fire risks. Barns can also be used to house silos for grain storage but, as with other old stone buildings, loose grain in large bulk should not be stacked against the walls, which were not designed to resist the lateral pressure by the grain. Damp-proofing of flooring and walls is also necessary if the grain is to be stored loose. In any proposed adaptation of existing farm buildings the present high labour costs make it of the utmost importance to see that the resulting building, both in its own layout and its relation to other buildings in the farmstead, is convenient and labour saving, and this should often be the decisive factor when considering whether to adapt an existing building or to scrap it and build afresh.

THE ROYAL AGRICULTURAL COLLEGE

H. Bailey, B.A. (Oxon.)
Bursar

NO account of Cotswold farming, or indeed of any farming, would be complete without reference to the Royal Agricultural College of Cirencester—so fondly described by one of its oldest alumni, Lord Bledisloe, as the premier agricultural college of the British Empire. *Arvorum cultus pecorumque* is the modest motto assumed by an institution which, had not the Royal Society forestalled it, might equally well have appropriated unto itself the more famous "Practice with Science". Oldest agricultural college in England by some fifty years, pioneer of agricultural education and discovery in the nineteenth century, the College today is held in esteem as much for its good practical farming as for its teaching. "No agricultural college justifies its existence unless it can lick the practical farmer at his own game" thunders the Principal, Robert Boutflour. Nothing could be more logical. And it goes far to explain why the College farms stand today as a superb example, not only to its students but to the general practitioner as well, of what farming efficiency can become when business, science and practice are combined.

Times change of course. The farming of agricultural colleges has in the past perhaps been a subject of mirth more often than respect. Agricultural education was not always held in the esteem implied in the following remark to a friend by an ex-student only a few days ago. "The course costs £90. It would be cheap at £900, or for that matter at £9,000." Be that as it may, it is true that something remarkable is happening at Cirencester, and has been happening now for some time, in a College already notable in the past for its rich contributions to agricultural education.

One Hundred and Five Years Old The history of the Royal Agricultural College goes back to 1845. Its foundation was by no means the expression of a *new* idea—as early as 1652 Hartlieb had advocated a similar institution; it was rather a culminating point in that strong movement for agricultural improvement which started at the end of the eighteenth century with Arthur Young as its brilliant exponent, and of which Liebig's lectures were to be the first concrete indication that science might be applied as profitably to agriculture as to any other industry.

More particularly perhaps its inception may be traced to an address given by Mr. Robert Jeffreys Brown to the Fairford and Cirencester Farmers' Club in 1842, in which he advocated the formation of a Public School of Agriculture in England. Public meetings followed, a most important conference was held on the subject at the Royal Agricultural Society's annual show meeting at Southampton in 1844, and as a result a large number of noblemen and others interested in agriculture became subscribers to the scheme which came to fruition in 1845. In that year a Royal Charter was obtained for the incorporation of "The Agricultural College." This highly prized Charter has only recently been rediscovered after being missing for forty years, and is now proudly displayed in the Principal's office. It is refreshing to find, therefore, that the College owed its origin not to academic foibles but to the good sense and liberality of those most closely interested in the practice of good husbandry—the progressive landowners and farmers of the time. Today, after more than a hundred years, that link remains as strong as ever, and is symbolized by the cordial relations and co-operation offered

to the College by the Royal Agricultural Society, the Royal Forestry Society, the Land Agents' Society, and the Royal Institution of Chartered Surveyors.

His Royal Highness Prince Albert not only consented to be Patron but became the first shareholder, holding the first five shares of £30 each. The College has been honoured by Royal patronage throughout its existence, and as recently as 1946 their Majesties were pleased to honour the College with their presence on the occasion of its centenary celebrations. In March, 1880, Queen Victoria conferred on the College the title of "Royal," and commanded that thenceforth it be called the "Royal Agricultural College."

The early years of the College were fraught with the financial difficulties incident to a new institution, for the management of which there existed no precedent and for which no public money was available. It says much indeed for the liberality of certain people that the College survived at all—notably Mr. Edward Holland, Earl Bathurst, Earl Ducie, J. H. Langston, Esq., M.P., and T. G. Bucknall Estcourt, Esq. Nevertheless it did survive, and to such good effect that Charles Dickens (whose son was a student at the College) could write in *All the Year Round* in 1868 :

> The farmer's occupation is the oldest, the most necessary, and, when rightly pursued, one of the worthiest a man can follow. Of late years it has risen to the dignity of a liberal profession, and the young Englishman may go through part of his special training for it in a well-appointed college.
>
> This is the Agricultural College at Cirencester.
>
> After fighting an uphill fight for twenty years, it stands now upon higher ground than any other institution of its kind. There is, indeed, no other of its kind in England ; but of institutions for the practical and scientific training of the farmer out of England ; among the agricultural academies in France, Germany, and elsewhere ; not one, we believe, is at the same time satisfactory and self-supporting.
>
> Our English college, founded six-and-twenty years since, not by the Government, but by working farmers, when a fashion had come up for recognising the new need of scientific training to their business, has not received one farthing of public money.

In the same article Dickens describes how Mr. Era Cornell visited the College from America and concludes :

> The result is the Cornell University in the State of New York, one department of which is planned upon the model of Cirencester, and forms the only good agricultural College in the United States.

The Pioneers The work of the College during the nineteenth century was notable as much for its research as for its teaching, and its pioneer work had a great influence on agriculture and in developing the scheme of agricultural education. The chemistry department in those days was housed in the beautiful old Tithe Barn, recently converted into the Students' Common Room. The first of the great heads of the chemistry department was John T. Way, who carried out research on the Analyses of the Ashes of Plants, and also on the Absorptive Power of Soils. He was followed by John Blyth, who edited Liebig's *Natural Laws of Husbandry*. In 1849 he was succeeded by J. C. A. Voelcker, who remained until 1863 and did much valuable work on soils and fertilizers, unexhausted values, and the introduction of potash. Then came A. H. Church, later Sir Arthur Church (1863-79), author of *Laboratory Guide for Agricultural Students*. Assistant to both Voelcker and Church was Robert Warington, famous for his invaluable work on nitrogen. On the retirement of Church, Edward Kinch was appointed head of the department, and remained there until the outbreak of war in 1914. James Hendrick, of the University of Aberdeen, was Assistant from 1891 to 1893.

Amongst the Professors of Agriculture, the best known were John Wilson, later Professor of Agriculture and Rural Economy at Edinburgh University ; John Coleman, the second holder of the College Diploma ; John Wrightson, an old student, author of several textbooks on Agriculture and the first experimenter in this country with basic slag, Professor Wallace, who succeeded Wilson at Edinburgh and wrote *British Breeds of Livestock;* and many others notable for their contributions to agricultural writings. Professors of Natural History included James Buchanan, pioneer in plant breeding, especially with oats, and producer of the " Student " parsnip ; William Fream, whose *Elements of Agriculture* is world famous, and Sir George Stapledon. The first Professor of Veterinary Science was George Thomas, later Sir George Brown, who became President of the Royal Veterinary College. Six members of the staff of those days were afterwards elected Fellows of the Royal Society, and three received knighthoods.

It is interesting to note too that the advisory work in this country grew out of the advice given by landowners and land agents who had been trained at the Royal Agricultural College, for in practically every large estate either the owner or the agent was an old student of the College. Sir Jacob Wilson, an old student, was largely responsible for the establishment of the second Board of Agriculture. The first County Organizer was an old student, appointed in Warwickshire in 1890. Before that time an old student was appointed by land agents in Cheshire as an itinerant lecturer in agriculture, Professor McCracken being one of the promoters of the scheme.

So much for the early history of the College, linked with the present in the great names of its old students such as Lord Bledisloe, Sir Archibald Weigall, Mr. Alexander Goddard, to mention only three. The affection in which the College is held by its students is perhaps best illustrated by the arrival last year of Mr. James Rennie of California, who left in 1884, and in his ripe old age had crossed the Atlantic specially to visit once more the scene of his early studies.

In 1915 so many of the staff and students of the College had joined the Forces that the College had to be closed. It was reopened in 1922 with the aid of a grant from the Ministry of Agriculture and by the generous contributions of old students and of the town and district of Cirencester. Their Majesties King George and Queen Mary visited the College in 1923 to mark the official reopening. Professor Dunstan came from Wye College to act as Principal, and on his retirement in 1927, he was succeeded by Professor J. A. Hanley. In 1931 the latter resigned to take the Chair of Agriculture at Armstrong College ; Mr. Robert Boutflour, the present Principal, who was Director of Dairy Husbandry at Harper Adams under the sponsorship of the Ministry of Agriculture succeeded Professor Hanley.

Development under Robert Boutflour

With the appointment of Professor Boutflour, the College may be said to have entered a new era in its history—a most remarkable stage of expansion and development which is not even now complete.

Many of the inimitable Professor's provocative early teachings have now passed into general practice and the textbook without any acknowledgment—some even appear as items of original research ! Much of what he is saying now will no doubt follow the same course, but fortunately this doesn't trouble him a whit ; if open acceptance of a " Boutflourism " involves loss of face, then let it be done covertly—so long as it is done. As he remarked epigrammatically to a recent gathering : " It would take me a lifetime to convince you that I was right, and if I was wrong it would take you a lifetime to find me out". But whatever else posterity does for Boutflour it will not

wish to deny his magnificent achievement in re-establishing the prestige of our oldest agricultural college and in steering it to a position undreamed of in 1931, except possibly by Boutflour himself. Today Professor Boutflour is a happy man. The Steadings Herd at the College, the remarkable achievements of which have been so widely publicized of late, stands as positive proof to the disbelievers. More important still it stands as a model of instruction for the unprecedented number of students actively engaged in absorbing the teachings of himself and his staff.

The personal qualities of Robert Boutflour which have been invaluable in the development of the College are his remarkable breadth of vision and anticipation, an uncanny shrewdness in putting his finger immediately on the core of any problem, his toughness, and a wholehearted devotion to the College he has already served so well. Most important of all perhaps from the policy point of view, he keeps both feet planted on the ground, and this he is enabled to do by a deliberately constant contact with practical farmers and landowners.

The task before him in 1931 was formidable, with a mere forty-eight students and accommodation for only fifty. But already in 1933 the steady increase had started. In 1934 the College succeeded in acquiring on lease an additional farm, Fosse Hill Farm, a mixed farm on typical Cotswold soil. This marked a very important step in the policy that an agricultural college must have adequate farming facilities. Completion of a new wing in 1936 and the building of a new hostel increased the residential accommodation to a hundred. In 1939 the erection of fine new laboratories was started. These were nearing completion in September of that year, but within three days of the outbreak of war the College, earmarked for requisitioning, had been closed.

A man of less calibre might have faltered. Not Boutflour. In 1945 he walked up the beautiful quarter-mile drive to the front of an empty College, with a mere £10,000 to reopen it, restock and re-equip some 420 acres of farm. In October of that year 80 students took up residence after herculean efforts by the slender staff, one or two of whom were not even demobilized at the beginning of Term. In October, 1950, five years later, 450 students will take up residence—one-half being trained in land agency and the responsibilities of landownership, and one-half being trained as practical farmers. Nor is this a mere outcome of the ex-Service demand, the numbers of whom are now greatly reduced. The signs are that it will be full for many years to come.

The main landmarks since the reopening of the College have been as follows. First, the equipping of the laboratories, probably amongst the finest of their kind. In 1947 through the generosity of Boots Pure Drug Company Ltd., and with the aid of the Ministry of Agriculture, Trent Lodge was acquired as a hostel for 40 students. A beautiful Cotswold house, Trent Lodge was once appropriately enough the home of the founder, Robert Jeffreys Brown. In 1948 the Drawing Office was re-equipped and the Tithe Barn converted into an impressive Common Room for students. In 1950 a new forestry wing has been established, and ambitious plans are afoot for the establishment of a machinery wing later in the year, to deal adequately with this aspect of ever-increasing importance in modern farming. Now, again with the assistance of the Ministry of Agriculture, the College has acquired Coates Manor, which is to be officially opened on May 24 by Lord Bledisloe and renamed Bledisloe Lodge. This is a magnificent early Georgian house, originally Hams Hall in Warwickshire, and will accommodate 60 students. Two hundred and seventy acres of land go with the property.

Since 1936 in fact (that is, in the last eight years of its being open) something like £110,000 has gone into development of the College. Its problems of accommodation are by no means solved. Even with Bledisloe Lodge added, there will be residential accommodation for less than half its students. The lecture rooms are not perhaps models of comfort. Nevertheless these are matters of secondary importance, to be met as time allows. The primary object, that of meeting the needs of as many as possible who require first-class tuition in land agency or farming, has been more than adequately maintained.

The College is extremely fortunate in possessing an illustrious Governing Body, under the able Chairmanship of Sir Frederick Cripps, and a very capable and highly qualified staff. The list of governors contains some of the best known names in agriculture.

Three Farms Research is no longer carried on by the College as such, though a good deal of individual research is carried on by the members of its staff. The College has stated clearly that its function now is to train the land agent or landowner and the practical farmer—in other words, to educate the man who wishes to stay on the land rather than the man who wants to be connected with it in an administrative or advisory capacity. Its function, therefore, is to impart to these men a fusion of all that is best and up to date in both the scientific discovery carried on at other centres and in farming practice. From this follows the insistence on good practical farming on the College farms, avoiding both experimentation and that type of instructional technique based on showing the good and the bad together.

In 1931 the College had a mere 40 acres of ground, inclusive of rugby and cricket grounds. The farming activities of the College, under the direction of Mr. Kenneth N. Russell, now embrace three farms which are run on strictly commercial lines, the object being to demonstrate efficient farming in the field or cowshed, and to provide an economic background to the lecture room. One of the farms, The Steadings, of 64 acres, is run as a highly specialized dairy holding, as typifying the family farm so characteristic of British agriculture generally. The other two, Fosse Hill and Field Barn farms, are run together as a typical dairy and arable farm of 365 acres in all. Varying as they do in cropping potential and in permanent equipment, these farms have provided very valuable teaching material.

Two attested dairy herds, one of British Friesians, the other of Ayrshires, are maintained, with a grading-up breeding policy in each case ; the one being to demonstrate how a successful dairying enterprise may be built up from modest capital resources—the usual approach for the young would-be farmer today. Apart from the dairy cows, minor livestock departments of grass sheep, breeding pigs, and laying hens, with the main scale crops—barley, potatoes, wheat, sugar beet and grass and/or clover seeds—provide the main sources of farm income. Costings kept of the farming operations under the auspices of Bristol University are made fully available to students during their farm management lectures—an aspect of agricultural education which receives increasing attention in the College curriculum.

Collegiate But the last word in the assessment of any College must lie in the vitality of its student body, and at the Royal this is beyond measure. Even our older Universities would be hard pressed to find amongst their Colleges a body of such promising young men. In general, it may be said that they are somewhat older today than in the past, and that they take their studies a good deal more seriously. Nevertheless they have lost none of the versatility in those pleasant pursuits of the countryman which has for

so long characterized the College. A College which can still run a pack of Beagles, provide a rider in the Grand National, the winner of the Empire Trophy (1948), and beat l'Institut d'Agriculture de Paris at Rugby in Paris shows that it has not allowed the technical burden of modern days to oust altogether the joys of life. Therein perhaps lies its secret—neither in the title Royal, nor Agricultural, but in the fact that it is a College in the real sense of the word.

Some 250 students are now emerging from the Royal every year. Time alone will tell of course, but if these students carry on the tradition of their predecessors (and there is little doubt that they will), they will together be something of a power in the agricultural world.

GOING TO THE SHOW ?

FOR generations going to the agricultural show has held a magic perhaps unequalled in any other industry. It appears alike to owners of large estates, farmers of a few acres and possessors of a 10-rod allotment.

Today it is a sign of the times that machinery occupies the greatest area of the ground, although the show still attracts the best of the pedigree blood. The bright colours, roaring machines, clattering elevators, the sceptics, enthusiasts, and inevitable schoolboy, make a scene as English as a Hampshire water meadow.

New machines usually make their first appearance at the shows, surrounded by a crowd often several deep. Here are the sons pointing out the advantages of the implement, and the fathers pointing out the disadvantages of the price ; the garrulous, pinstriped salesman, and the brown hands and blue serge of the men who know best of all how much it is likely to do. There is always the young man who is very conversant with the underlying scientific principles—and next to him invariably stands old Grandpa who has " seed 'em all afore ! "

Then there is the electricity tent, offering press button control for anything from milking cows to making early morning tea. There are usually one or two firms that manufacture a machine that very few want at a price that nobody can afford, and the clever, moustached gentleman who demonstrate—and sell—an attachment that will peel potatoes, address envelopes, and cure in-growing toe-nails.

And the stock—all very conscious that they are the cream of the land—stand with that supercilious look of a pedigree animal.

The parade of these prize winning creatures is a wonderful sight, with herdsmen and stock wearing a smug look of satisfaction, both mutually relieved that the sand papering, grooming, and wishful thinking are over.

At the larger shows the ring events usually include a display by the Household Cavalry or similar experts, and the audience of several thousand watch in wonder as the horses and riders perform the most intricate exercises —indeed, they often sorrowfully conclude that the horses have more sense than most human beings !

A point of great importance to the success of any show is the weather. It should not be too hot—or too wet ! If hot, shooting sticks and ice-cream trollies are in demand, and if wet—anything that will give protection.

Few shows are complete without a flower tent, where all the flowers which fail at home are exhibited in their full beauty, and one is always tempted to buy another packet of seeds and try again. It has been said that faith will

never die as long as coloured seed packets are printed, and this is well borne out at the show.

Towards the evening, the exodus to distant homes starts, ending a red-letter day that began before dawn—a day of watching and wondering, standing and staring. After the good-byes have been said to old friends, the rust-rimmed farm car is rescued from the rows of gleaming limousines, and the long journey home commences.

The above extract from "Chaff and Caving" by David Butler, (reviewed on p. 200 of this issue) is reproduced by courtesy of the publishers.

THE PASTORAL STORY OF THE COTSWOLDS

JOHN GREEN

FROM the strategic promontory of Edgehill to the architectured terraces of Bath, from the Isis at Oxford to the summit of Cleeve Hill overshadowing Cheltenham, lies one of the world's natural divides. It is perhaps far-fetched nowadays to compare such modest woldland with the Rockies or the Alleghanies, the Australian Blue Mountains or the mountains of the Cape, yet in both historical importance and topographical significance the Cotswolds have divided far more separate worlds than ever the covered wagon crossed. They are part of the table-land of oolitic limestone that divides the whole South of England from the English plain. They represent a geologic upheaval of tertiary times, and although they retain their character throughout Northamptonshire, it is in Gloucestershire and Oxfordshire that we recognize their real distinction. It was of them that Shakespeare with bitter local knowledge wrote:

These high, wild hills, and rough uneven ways
Draw out the miles and make them wearisome.

In the west the escarpment is a thousand feet, and from promontories such as Nibley (commemorating the translator of the Bible) Cleeve or Broadway, the hills of Wales are often liquid clear in the rain-laden distance. In the vale below the elms of Gloucestershire hides the red sandstone plain, while to the North the oaks of Warwickshire continue the illusion of unbroken forest on the lias clay. In the middle distance the Severn twists and glistens with restless Celtic energy, until its effort is spent in the slurry of silt that has pushed the ancient port of Bristol inland. To the seat, by contrast, change is diffident and imperceptible. From a few eminences a half view opens out across the White Horse Vale to the Wiltshire and Berkshire Downs, but for the most part the horizon is limited by countless little coombs, through which flow modest trout streams. These, like the Coln at Bibury and the Windrush at Bourton, are well known to summer tourists. All converge upon the classic waters of the Thames and so make Oxford the natural entrance to the Cotswolds.

Wool—A Stage in Social Development

More than three-quarters of the history of the Cotswolds is concerned with wool. Cirencester wool is mentioned in Domesday Book. As pastoral country, the hills were renowned for quite four centuries, and the fortunes which sprang from their light, free-draining soils are now enshrined in church, grammar school, and market place. It is common knowledge that after the Black Death, the depopulated countryside of Southern England fell down to open sheep-walk. The restrictive manorial system had failed, and through years of Civil War and Social indecision, a new mercantile outlook

arose. British wools became as essential to the Flemish weavers as are Australian wools to Yorkshire and the West of England at the present time. The Spanish wools were not then an organized force on the European market. The pastoral princes of the Cotswolds were therefore the great *estancieros* or squatters of pre-Tudor England. They sold to agents at the staples on the Continent whose names outrivalled in their day the Morts and the Goldsboroughs of the southern hemisphere. Their strings of packhorses carried the fleeces, over ancient trackways across the Berkshire and Hampshire Downs, to the Medway ports and Calais. Royal concern in the trade was intense, and every effort was made through powerful organizations like the Merchants of the Staple to maintain the price of British wool on the Continent. If rings were made by the Flemish merchants on markets such as Bruges, the King would retaliate by forcing the foreign buyers to come to Winchester or Chipping Campden. It was the struggle that has existed between Sydney and Melbourne and the wool sales of Coleman Street in the City of London. After the Battle of Bosworth, the Continental trade returned to the Continent, but by then the markets were firmly controlled by the men who were enriching, with Perpendicular glories, the churches of Campden, Northleach and Fairford.

Most of our knowledge of this period derives from the letters of the Cely family, who were Merchants of the Staple and closely associated with Northleach. In 1479, Richard Cely wrote to his son George, then either at Calais or Bruges:

> Your letter came to me the Sunday before Allhallows Day at dinner time in London, and Wyll Eston mercer and Wyll Medewynter of Northleach dined with me at (the) time: and the comfort of your letter (George had been ill) caused me to buy of the aforesaid Wyll Medewynter 60 sacks of Cottys (Cotswold wool), which is in pile at Northleach . . . I am advised for to pack the foresaid wool after Xmas toward Candlemas and trust in God ye shall be at the packing of the said wool in Cotswold.

Thus we learn from the Celys that their head office was in Mark Lane, with its branches at Northleach and Calais; that they bought their wool through merchants like Wyll Medewynter and attended its dispatch from their wool stores at Northleach. The reputation of their firm on the Continent was no doubt such that the "classing," as it is called today, could not be left to inexpert hands. Of ruling prices in the Cotswolds we do not hear much, but in the summer of 1481 four years before the crown of York fell from Richard's brow, "wool in Cotswold is in great price, 13s. 4d. a tod, and great riding for wool in Cotswold as was any year this seven year". The value of money we must gauge from the supererogations of Wyll Medewynter, who sought to interest George Cely in a great heiress of forty pounds a year in her own right. Her father, he claimed, was a pastoralist, the mightiest gentleman in the Burford district. For the rest we learn that the Celys attended to their religious devotions between anxious deals, while the stones of the new and lofty nave of Northleach church were scarcely weathered from the quarry.

The same associations account for the beauties of Fairford in the south and Chipping Campden in the north. The twenty-eight stained-glass windows of Fairford church were the gift of another wool merchant, John Tame. Tame who worked the Cirencester area pulled down an earlier Decorated Church and raised the present exquisite building which has survived the iconoclasm of both the Reformation and the Commonwealth. The legend that he captured the glass at sea, bound from Flanders to Italy, and then built his church is less likely than that he commissioned it from a Flemish artist for the church that he was building. The indisputable fact is the connection between Fairford and the trade with Flanders. In the same way, William Grevel, described in brass as "the flower of the wool

merchants of all England," left his hundred mark fortune for the building of Campden church. Campden was perhaps the greatest of all the woollen towns, and the Woolstaplers' Hall, with its warehouses adjoining, has long been known to American visitors. The pity is that artists and tourists approach it too often in a spirit of archaeological curiosity rather than as economic fact. If they could but look back in imagination down the long High Street lined with Grevel's pack-horses and sumpter mules, they would appreciate how the pastoralists of the North Cotswolds opened their pokes and sarplers as they are doing today in Sydney and Brisbane. Wool is not a casual fact in history but a stage in social development which is regulated by the transition from grazing to farming.

A zoological mystery that still intrigues us is the nature of the sheep from which this wool was cut. No graphic record had been left in glass or stone, and no verbal record of the character or spinning count of their fleeces. That they once outrivalled the Merino has been noted. On the other hand, the finest Merino wool does not come from warm districts, but rather from poor soils and temperate climates, such as south-western Victoria and Tasmania. Strong land only coarsens the fibre of the wool, as does high farming. Perhaps the endemic pastures of the Cotwolds did once grow a fleece that was super-line; at least in 1613 Michael Drayton wrote of the old Cotswold breed:

The sheep our wold doth breed
(The simplest though it seeme) shall our description need,
And shepheard-like the Muse thus of that kind doth speak,
No browne nor sullied black the face or legs doth streak
Like those of Moreland, Cank or of the Cambrian Hills
That lightly laden are: but Cotswold wisely fills
Her with the whitest kind: whose brows so woolly be
As men in her fair sheep no emtiness should see.
The staple deep and thick through to the very graine
Most strongly keepeth out the violentist raine.
A body long and large, the buttocks equal broad
As fit to undergoe the full and weightie load.

However, against such eulogy we have the more prosaic opinions that English longwool was used mainly for worsted fabrics and to give strength and firmness to cloth, that it was only in combing wool for this purpose that England held her monopoly on the Continent. The short wools which were used for broadcloth always feared the rivalry of the Merino. This is certainly supported by the fact that the secondary manufacture of cloth in the West Country which sprang from the primary initiative of the Cotswolds, soon turned to European and later to Australian wool. Perhaps after all, the early Cotswold fleeces did leave something to be desired.

Cotswold Blood If the Tudor enclosures broke down settlement, the eighteenth century enclosures had the opposite effect. The Industrial Revolution called for well-housed men in the villages who would grow bread and meat, rather than lonely shepherds on the hills. We learn that the average weight of a sheep rose from 28 lb. in 1710 to 80 lb. in the 1790s; lambs from 18 lb. to 50 lb. in the same period. This was largely the work of Robert Bakewell and the great improvers. Although the Cotswold tillage land could boast no Rockingham, Coke or Bedford, they did for a time claim Bakewell's greatest rival in the field of livestock husbandry. In a period of social transition, when coursing and horse-racing were more popular on the Cotswolds than enclosure, and primeval forests like Wychwood teemed with wild life, human as well as animal, much to the chagrin of prudish Arthur Young, Richard Fowler of Little Rollright started breeding Longhorns. He purchased several heifers from Mr.

Webster of Canley and hired the bull "Twopenny" from Robert Bakewell. He continued to hire bulls from Bakewell until, in 1778, one called "D" was mated to a Canley cow and produced "Shakspear". "Shakspear" was the most celebrated animal of the breed, and the fame of Fowler's Oxfordshire herd spread throughout England. Some years ago Dr. C. S. Orwin visited the old Fowler home of Rollright and secured from its then inhabitant some crude but attractive oil paintings of the Fowler Longhorns. These hung, during Dr. Orwin's term as Head, on the stairs of the Agricultural Economics Institute, Oxford. We may well regard Mr. Fowler's dispersal sale in 1791 as the first of those high-priced cattle sales which command near hysterical attention, and which we continue to witness. A few of the prices give some indication of the value of his stock, especially if we bear in mind the value of money in the eighteenth century.

Garrick, a bull, 5 years old by Shakspear of Broken Horn Beauty which came of Longhorn Beauty	£215
Sultan, two years old, by Broken Horn Beauty	£220 10s.
Washington, by Shakspear, out of Washington's mother	£215 5s.
Young Sultan, one year old, by Garrick	£210
Brindled Beauty, a cow by Shakspear by Longhorn Beauty	£273 etc. etc.

The greater part of Fowler's cattle was bought back into Staffordshire and Warwickshire, and it is of interest that the survivors of the breed could have been seen near Northleach a few years ago on the farm of the late Mr. Swinnerton, a Warwickshire man. The doom of the breed was however sealed at the time of Fowler's sale, for by then the Teeswater Shorthorn had appeared in County Durham.

If Bakewell's breeds, the Leicester sheep and the Longhorn cattle, did not in themselves achieve the fame of his principles as a breeder, his rams, by crossing, undoubtedly changed the pastoral face of Britain. By 1800 the Leicester had outcrossed most of the longwoolled sheep of the Midlands. Nevertheless it would be wrong to assume that it was the new Leicester which necessarily gave them size. Rather is it true that it was the agriculturists of the Cotswolds, Lincoln and Devon, who maintained size while improving the fast maturing of their local breeds. Thus they evolved from medieval grazing sheep the mutton breeds which suited the final enclosures. The new sheep were docile and greedy feeders which could live close-folded and convert hay and turnips into mutton for the table and fertility for the soil. It is certain that the improved Cotswold sheep of the Lanes, the Garnes and the Hewers were famous when the nineteenth century opened. The Cotswold breed, now virtually extinct but for Mr. Garne's flock at Aldsworth, have been exported throughout the world, notably to Northern Europe and the U.S.A. The whiteheaded Oldenburg, a notable German breed, and the mutton sheep of North Friesland are descended from the Cotswold. Some Cotswold blood is to be found in the Corriedale and, if it dare be hinted publicly, there is a suggestion that it flows in the magnificent South Australian Merino. The Cotswold sheep is one of the weightiest yet achieved by the stockbreeder's art, and its passing is an undisputed loss to the whole pastoral world. On the Cotswolds today a recent cross with a Dorset Horn can be seen nearing the status of a new breed, and anyone who thought the carver's tip was worth the cut they enjoyed at Simpson's in the Strand, may like to known that those massive joints came from the Cotswold-Suffolk cross of South Norfolk.

At the close of the eighteenth century we might have begun to recognize the Cotswolds somewhat as they are today. Around the village, the new fields would have acquired their present names and only at the parish boun-

daries would some vestige of the old sheep-walks remain unwalled. The thousand-acre sheep and barley farm was taking shape. The enclosures, both in Oxfordshire and Gloucestershire, were well advanced, and the report on Gloucestershire in 1807 states that "on the Cotswolds many thousand acres are brought into cultivation which before were productive of little else than furze and a few scanty blades of grass". In Aldsworth the annual produce of corn rose from 720 quarters to 2,300 quarters; in Eastington from 690 quarters to 2,100 quarters. Swedes and turnips enabled the sheep to be close-folded in the winter, and in summer the fields were red with sainfoin—still loved of the shepherd and the beekeeper. There is a legend that sainfoin (virtually a weed of calcareous soils) was introduced into the Cotswolds by Warren Hastings, while squire of Daylesford. Suffice it that by 1800 sainfoin and barley already brought abundance out of the limestone rock and enabled the former sheep-walk to compete in the rising volume of war-time production with the better soils of Britain. Its pastoral glories alone would not return, for rougher and more uneven ways than ever Shakespeare knew existed in the New World; and by then McArthur had established the Spanish Merino on the Nepean River in New South Wales. Well might Edward Shepherd, clothier and flockmaster of Uley, who was attempting to grow his own wool by using a Spanish ram on Ryeland ewes abandon the attempt in 1806. He wrote of this experiment to Sir John Sinclair:

> To conclude—I do not assert that it is unpracticable to produce, and to preserve in England, wool equal to the finest quality in Spain, with the same management as is practised in countries under climates somewhat similar; but that where land is so valuable, and where a regular course of husbandry is adopted on a comprehensive scale, as it is with us, I do not think such management can be looked for.

After the war came a period of price recession, but many Cotswold farmers survived the shock. Foremost among them would have been the Cotswold sheep breeders whose ram lettings numbered thousands in the fall of the year. Then just before the accession of Queen Victoria the Cotswolds gave birth to a new breed of sheep. The Oxford Down came into existence.

It is said that John Twynam, a Hampshire breeder saw the result of crossing Cotswold rams on Hampshire ewes and adopted the practice himself at Whitchurch in Hampshire. Soon a group of Witney farmers bought cross-bred rams from Mr. Twynam, which gave the new breed its local origin. Indeed there is a tendency with commercial flockmasters the world over to alternate their breed of sire in the hope of combining the chance of fashion with the safety of convention. To such specious opportunism many new breeds have owed their origin, including probably the improved Cotswold itself. At any rate the new Oxfordshire breed soon became prominent at Smithfield. It was Howard, the implement manufacturer of Bedford, who in 1868 introduced the Oxford into the borders of Scotland and who, in 1884, sent rams to the great fair at Kelso. He was supported in this by the Treadwells of Buckinghamshire, the Hobbs of Maisey Hampton, and Stilgoes of Adderbury. And soon the practice became quite an annual event, with a thousand English Oxford rams pitched at this sale alone. The prejudice of the Border shepherds against "housefed brutes" was overcome, and records show the rapid supercession of the three-quarter bred Border-Leicester by the Oxford Border-Leicester cross. The Oxford Down has maintained its pre-eminence as a crossing breed, until today it is more strongly represented in the North of Britain than in the Cotswolds. It has yet to achieve the international reputation of the Cotswold sheep which preceded it, a task in which it is handicapped by its black face. Four-fifths of the world's flockmasters abhor black-faced sheep and would acclaim with Drayton "no browne or sulleyed black the face or legs doth streak".

A Part of the World's Pastoral Story

The Cotswolds have passed and will continue to pass through new farming vicissitudes. The bleak unsheltered soils are cold in winter and late in spring. The fissured limestone rock eats nutriment that is not stored away in humus. Thus the Golden Hoof compacted the brashy, open-textured ground, and all developments of farming will still be variants on livestock husbandry. However, livestock reveal a quality that is not always shown in other parts of Britain. If sheltered they grow big, while horn and bone grows fine. Moreover, the Cotswold soils are clean and alkaline; rainfall is reliable; and there is no heavy costs of drainage or of cultivations. The Cotswolds farmer is tidy and must work harder than his cousin in the vale, but he is often less a slave to routine and has always found time for the traditional pastimes of the hills. Although near the economic margin in adversity, there are always the exceptional few who have made a virtue of necessity. In the great depression of the 'eighties, men like Aubrey Handy throve while others failed; and in the late depression of the 'thirties, Webster Cory of Notgrove found value in the thinnest soils for folding poultry and milking cattle in open folds. Nor is the Cotswold outlook unenlightened. Under the enduring patronage of the Bathurst family, Cirencester claims the first agricultural college in the British Empire, which already numbers among its alumni a Governor of South Australia and a farmer Governor-General of New Zealand. Supposing "corn is down" for long, will the Cotswolds go back again to thorn and rabbit? In the past that has begun to happen several years before the lightland farmers of Norfolk have raised the agricultural SOS on Norwich Hill. But we have learnt a great deal in these recent years about growing grass on land that used to be thought too "hot" to carry a sward. But have we learnt enough? Let therefore those who approach the Royal from the West, and overseas visitors who will inevitably go on to Bath and Stratford, remember that the scenic and architectural fascination of the Cotswolds is but a part of the world's pastoral story. Indeed the Temple and the Muse are themselves but the expression of the common struggle to provide food and clothing somewhere that is unique.

GUARD YOUR POTATO CROP !

Potato growers are again reminded of the need for the utmost vigilance during the summer months to prevent the Colorado beetle establishing itself in this country. This pest is now prevelant in many European countries and several isolated beetles have already been found in this country this year. The possibility that a few undetected arrivals may have reached potato crops must not be overlooked, and growers are urged to have their crops examined regularly and to report at once if they discover or suspect the presence of the beetle.

About 29,000 acres of potatoes will this year be sprayed or dusted as a precaution against the formation of breeding colonies. The precautionary spraying will be done in the districts in the south-east of England, where most breeding colonies have previously been found, and around the ports of Harwich and King's Lynn. The discovery of any new centres of infestation must inevitably depend to a large extent on the continued vigilance of growers, and upon receiving prompt notification of a suspected occurrence of the beetle so that counter measures may be taken without delay.

The Ministry's Advisory Leaflet No. 71 gives a full description. Any yellowish beetle about half an inch long with black stripes—running up and down the beetle, not across— or any red or reddish yellow grub found on potato leaves or among vegetables should be regarded as suspect, and specimens sent, preferably with a piece of potato leaf, in a tin box *with no holes* to an officer of the N.A.A.S. or to the Ministry of Agriculture, Plant Pathology Laboratory, Milton Road, Harpenden, Herts, with a letter stating the exact place where found, and the name and address of the finder. Nothing more should be done until instructions are received from the Ministry.

RIDING WITH COBBETT

Extracted from William Cobbett's *Rural Rides*

Oxford,
Saturday, 17 *November*, 1821

We left Old Hall (where we always breakfasted by candlelight) this morning after breakfast ; returned to Bollitree ; took the Hereford coach as it passed about noon ; and came in it through Gloucester, Cheltenham, Northleach, Burford, Whitney, and on to this city, where we arrived about ten o'clock . . . At Gloucester (as there were no meals on the road) we furnished ourselves with nuts and apples, which, first a handful of nuts and then an apple, are, I can assure the reader, excellent and most wholesome fare. They say that nuts of all sorts are unwholesome ; if they had been, I should never have written Registers, and if they were now, I should have ceased to write ere this ; for, upon an average, I have eaten a pint a day since I left home. In short, I could be very well content to live on nuts, milk, and home-baked bread.

From Gloucester to Cheltenham the country is level, and the land rich and good. The fields along here are ploughed in ridges about 20 feet wide, and the angle of this species of *roof* is pretty nearly as sharp as that of some slated roofs of houses. There is no wet under ; it is the top wet only that they aim at keeping from doing mischief.

* * *

Burghclere (*Hants*),
Sunday, 18 *November*

We left Oxford early and went on, through Abingdon (Berks) to Market Ilsley . . . On the way to Ilsley we came across a part of that fine tract of land, called the Vale of Berkshire, where they grow wheat and beans, one after another, for many years together. About three miles before we reached Ilsley we came to downs, with, as is always the case, chalk under. Between Ilsley and Newbury the country is enclosed ; the land middling, a stony loam ; the woods and coppices frequent, and neither very good till we came within a short distance of Newbury. In going along we saw a piece of wheat with cabbage-leaves laid all over it at the distance, perhaps, of eight or ten feet from each other. It was to catch the slugs. The slugs, which commit their depredations in the night, creep under the leaves in the morning, and by turning up the leaves you come at the slugs, and crush them, or carry them away. But besides the immense daily labour attending this, the slug, in a field sowed with wheat, has a clod to creep under at every foot, and will not go five feet to get under a cabbage-leaf. Then again, if the day be wet, the slugs work by day as well as by night. It is the sun and drought that he shuns, and not the light. Therefore the only effectual way to destroy slugs is to sow lime, in dust, and not slaked. The slug is wet, he has hardly any skin, his slime is his covering ; the smallest dust of hot lime kills him ; and a few bushels to the acre are sufficient. You must sow the lime at dusk ; for then the slugs are sure to be out. Slugs come after a crop that has long afforded a great deal of shelter from the sun ; such as peas and vetches. In gardens they are nursed up by strawberry beds, and by weeds ; by asparagus beds ; or by any thing that remains for a long time to keep the summer sun from the earth. We got about three o'clock to this nice, snug little farmhouse, and found our host, Mr. Budd, at home.

* * *

Burghclere,
Tuesday, 20 November.

With Mr. Budd, we rode today to see the Farm of Tull, at Shalborne, in Berkshire. Mr. Budd did the same thing with Arthur Young twenty-seven years ago. It was a sort of pilgrimage ; but, as the distance was ten miles, we thought it best to perform it on horseback. We passed through the parish of Highclere, where they have enclosed commons, worth, as tillage land, not one single farthing an acre, and never will and never can be. As a common it afforded a little picking for geese and asses, and, in the moory parts of it, a little fuel for the labourers. But now it really can afford nothing. It will all fall to common again by degrees.

* * *

Hayden,
Saturday, 30 September, 1826

After Cheltenham we had to reach this pretty little town of Fairford, the regular turn-pike road to which lay through Cirencester ; but I had from a fine map, at Sir Thomas Winnington's, traced out a line for us along through a chain of villages, leaving Cirencester away to our right, and never coming nearer than seven or eight miles to it. We came through Dodeswell, Withington, Chedworth, Winston, and the two Colnes. At Dodeswell we came up a long and steep hill, which brought us out of the great vale of Gloucester and up upon the Cotswold Hills, which name is tautological, I believe ; for I think that wold meant high lands of great extent. Such is the Cotswold, at any rate, for it is a tract of country stretching across, in a south-easterly direction, from Dodeswell to near Fairford, and in a north-easterly direction from Pitchcomb Hill, in Gloucestershire (which, remember, I descended on the 12 September), to near Witney in Oxfordshire. Here we were, then, when we got fairly up upon the wold, with the vale of Gloucester at our back, Oxford and its vale to our left, the vale of Wiltshire to our right, and the vale of Berkshire in our front : and from one particular point I could see a part of each of them. This wold is, in itself, an ugly country. The soil is what is called a stone brash below, with a reddish earth mixed with little bits of this brash at top, and, for the greater part of the wold, even this soil is very shallow ; and as fields are divided by walls made of this brash, and as there are for a mile or two together, no trees to be seen, and as the surface is not smooth and green like the downs, this is a sort of country having less to please the eye than any other that I have ever seen, always save and except the heaths like those of Bagshot and Hindhead. Yet even this wold has many fertile dells in it, and sends out, from its highest parts, several streams, each of which has its pretty valley and its meadow. And here has come down to us, from a distance of many centuries, a particular race of sheep, called the Cotswold breed, which are, of course, the best suited to the country. They are short and stocky, and appear to me to be about halfway, in point of size, between the Rylands and the South Downs. When crossed with the Leicester, as they are pretty generally in the north of Wiltshire, they make very beautiful and even large sheep ; quite large enough, and, people say, very profitable . . .

The crops on the Cotswolds have been pretty good ; and I was very much surprised to see a scattering of early turnips, and, in some places, decent crops. Upon this wold I saw more early turnips in a mile or two than I saw in all Herefordshire and Worcestershire and in all the rich and low part of Gloucestershire. The high lands always, during the year, and especially during the summer, receive much more of rain than the low lands. The

clouds hang about the hills, and the dews, when they rise, go, most frequently, and cap the hills.

Wheat-sowing is yet going on on the wold ; but the greater part of it is sown, and not only sown, but up, and in some places high enough to " hide a hare". What a difference ! In some parts of England no man thinks of sowing wheat till November, and it is often done in March. If the latter were done on this wold there would not be a bushel on an acre. The ploughing and other work, on the wold, is done in great part by oxen, and here are some of the finest ox-teams that I ever saw.

BOOK REVIEWS

The Cotswolds. (Vision of England Series). ROBERT HENRIQUES. Paul Elek. 15s.

Few places in Britain have been happier hunting grounds for the artist and the writer than the Cotswolds. What is the secret of this persisting attraction ? This essay—or as its author is pleased to call it, " this anthology of absurdities "—furnishes the answer as Mr. Henriques has found it. The secret, imparted quite delightfully, is briefly the harmony between man and nature. I like the author's crisp style, his observation, as when he evaluates the beauty of the Cotswold landscape as being " full of laws—agricultural, technical, economic, social and psychological," yet artistically lawless in its defiance of the artist's conventional composition. " No studio could cook up such a joke. The design is beyond invention. It is artistically an accident. The accidents were all domestic : the pig-headedness of a smallholder ; the way that cattle were driven to water, or sheep to shearing, or a sow to her wedding. Or the path that lovers wandered through the standing barley."

There is a nice touch, too, of cynical humour in Mr. Henriques's writing, as when discussing some of the more " adventurous " visitors to the Cotswolds who penetrate the hinterland—that is, beyond the frontiers of the better-known show-places.

" Sometimes they wait patiently while the cows are driven past on their way to milking, or pull into the side of the road for a restive horse. They have been known to ask permission before they come through a garden gate to gather flowers and fruit. They do not always search the poultry house for eggs. A few are truly enlightened with an understanding that the free and easy ways of the city where, so it seems, any stranger may enter any house and help himself to rations from the larder shelf, are strange to the Cotswold hills. There are some who even respect the privacy of the garden wall".

Exaggerated ? Perhaps. But the author makes his point with greater certainty because of it.

His comments on the commercial spoilation of the show-places is trenchant, but he is unable to resolve the question whether the heritage of the beauties of the English countryside can be enjoyed by the touring visitor without of necessity opening them up to exploitation by people with an eye to the main chance. The alternatives of indifference and neglect may engender decline of another nature.

The grace and beauty of this part of England are renowned the world over, but it is as an agricultural area, with special problems, and not as a playground that it must first be considered. That is Mr. Henriques's perspective, supplemented by Mr. Humphrey Spender's arresting drawings and some thirty excellent half-tone plates ; the author conveys the charm without losing sight of its derivation.

Two of the photographs included in the book are reproduced by courtesy of the publishers on p. ii of the art inset.

S.R.O'H.

Green Hills and Grey Spires (A Breath of England—Book 3). NORMAN WYMER. Lutterworth Press. 12s. 6d.

Continuing his task of writing informatively about different sections of England, Mr. Wymer has for his third book turned to the West Midlands. Here, surely, is a very suitable book for the foreign visitor who has little time to spare for the more extensive reading of "County" books. Many who live in Britain, too, will discover, or re-discover, much of permanent interest in its 259 pages.

Are there any geographical units in all the world so "individual" as the English counties? And what strength of individuality is found in the counties of the West Midlands—the English "Shires"? For these are the "coloured counties"; together they compose the very heart of England. They contain both our richest farming countryside, with its quiet lanes

and fields, and the industrial core of the country. But even collieries, iron foundries and glassworks hold interest for some people, and who can deny that the potteries of Staffordshire have their own special claim to world-wide fame? To some people the name of Josiah Wedgwood means more than that of William Shakespeare.

Although he must often have found himself on well-trodden paths and enveloped in the "guide book" atmosphere, I wish that the author could have written with greater personal feeling. As it is, much of the writing tends to lack tone and reveals an absence of percipience. But such is the nature of Mr. Wymer's task of condensing and presenting so great a mass of varied information that we can forgive him much. Rather, let us acknowledge that this volume is a praiseworthy effort to describe a part of England that always stirs the imagination. Here are rivers great and small, like the Avon and the Windrush; cities of fame, like Oxford and Lichfield; and little towns that are great national possessions, like Stratford-upon-Avon and Warwick. And if there are hamlets that, like Wilmcote and Shottery, are "meccas" for the whole world, there are many, like those in the heather and bracken-clad Clun Forest country, that are known only to a few simply as places where can be found a profound peace:

Clunton and Clunbury,
Clungunford and Clun,
Are the quietest places
Under the sun.

It is to the seven-page index that one instinctively turns for preliminary tasting: it is always a delight to pick out the places one knows and turn to see what has been written about them. A second index, listing all the literary figures encountered in this book, would have been a welcome addition, for this part of England gave us William Shakespeare, Michael Drayton, William Congreve, Dr. Johnson, Elizabeth Barrett, George Eliot, Mary Webb, Walter S. Landor, and many more.

When all is said, however, we feel that they were people of a special kind; rather it is the ordinary people of the towns and villages, of the farms and factories, that hold our attention as we read through this book. For we know that in her day Mary Arden was no more than a yeoman farmer's daughter who was taken with the look of a local lad named John Shakespeare. But she came of the stock that can be found even today throughout this land of "green hills and grey spires". Some beautiful photographs have been used for illustrations, but one of them is curiously captioned: "Haymaking in the heart of Oxfordshire"; actually it is a picture of corn threshing!

A.H.H.

The Principles and Practice of Cider-making. Dr. V. L. S. Charley. Leonard Hill. 35s.

The publication of this work is quite an event in the history of the literature relating to the cider industry. The classical French book, Warcollier's *La Cidrerie*, of which this is a more or less straight translation, has always been regarded, since the publication of its first edition, as the standard book in any language on the science and practice of cider-making. The translator, Dr. V. L. S. Charley, who became a recognized authority on the subject during his fifteen years as cider chemist at the National Fruit and Cider Institute is to be congratulated on the way in which he has accomplished his task. No other book in existence covers the subject as this one does. Apart from the Annual Reports on the experiments initiated by the Bath and West Society in 1894 and continued at the Cider Institute, little information on the subject has recently become available in printed form.

The importance and extent of the cider industry in France may be judged from the figures given of the average annual production from 1936-45 which is estimated at 377 million gallons, as compared with 20 millions in England. It is not surprising, therefore, that so much in the way of research has been carried out in France.

As the translation is not entirely straight it is occasionally difficult for the reader to decide whether some of the views expressed are those of the original writer or of the translator. The latter has, however, wisely added his own "addenda" to each chapter (mainly the results of investigations at the Cider Institute), thus bringing the matter up to date. Opening with a few chapters on French cider apples and statistics, which are only of general interest to English readers, this volume is comprehensive of its subject, from storage and washing of fruit to milling, maceration, pressing, refrigeration, fermentation, fining, filtration, centrifuging, concentration and bottling. A wide variety of beverages made from apples is dealt with, ranging from "Champagne" cider and non-alcoholic juices to *eau de vie*. Cider "disorders," their prevention and cure, also come in for some attention. Most of this is of great practical interest to all cider-makers and could, with advantage, be applied in this country, but some of the more technical details are a little difficult for the average maker, especially farmers, to follow and to put into practice. French technique

is apparently far in advance of English, and a study of the book has shown me, even after more than fifty years' experience in cider-making, how much I have still to learn on the subject! It appears, however, to be a rather sweeping assertion that "the cider-making industry will never achieve a standardized, controlled production until it has installed the necessary refrigerating machinery to enable all fermentation processes to be carried out at low temperatures". The economics of cider-making are but lightly touched upon. The quoted yields of juice per ton of apples pressed in France appear in some instances to be very low, namely, 100 gallons or even less, compared with 150-160 gallons in England. Incidentally, the centigrade scale is used throughout for all temperatures; it would have been helpful to most English readers if a table showing the corresponding Fahrenheit degrees had been included.

The book, which is dedicated to Professor B. T. P. Barker of Long Ashton Research Station, is attractively produced, with 86 illustrations, mainly of English machinery. The advertisements are also interesting and useful, especially for newcomers to the industry.

W.D.McC.

Chaff and Cavings DAVID BUTLER. Holmes. 5s.

Those who have come into contact with the Young Farmers' Club Movement—and there must be few with an interest in the land who have not—will bear testimony to the versatile talent of its members. Whether it be in the varied practical arts or upon the platform, the average young farmer shows a superiority that is at once the admiration and despair of those less well blessed in all but years. It was inevitable, of course, that the last stronghold, that in the field of the written word, would soon be invaded. The recent appearance of *Chaff and Cavings* shows that the young farmer is not less skilled with the pen than he is with commoner implements of husbandry.

This little book, written by 21-year-old David Butler, preserves in more permanent form a series of articles which first appeared in the *Andover Advertiser*. The young author has already amassed an extensive knowledge of farming practice and sets his thoughts down in a pleasing style which is illuminated by an attractive sense of humour.

With the original purpose of the articles in mind, it was unavoidable that the tailor has had to fashion his coat on tight-fitting lines, and however modern this style may be one is left with the hope that one day soon he may be persuaded to make for us a garment which is allowed to cover the subject more generously.

J.A.

An excerpt on the subject of the fascination of agricultural shows is given on p. 189 of this issue.

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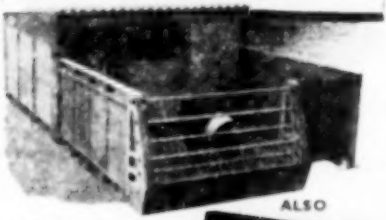

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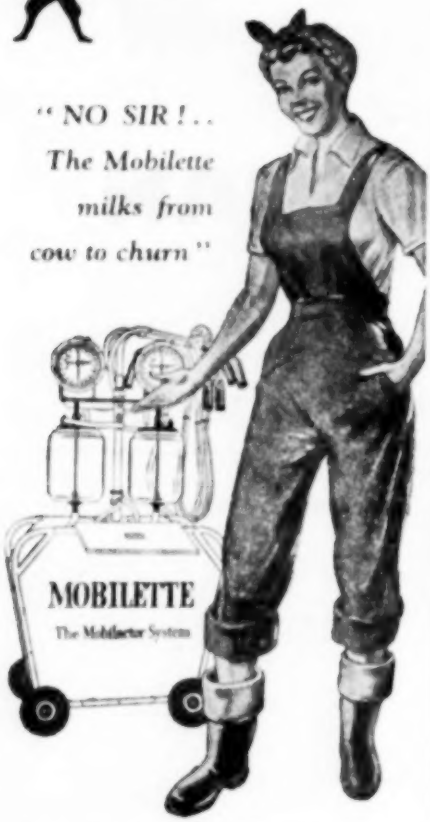

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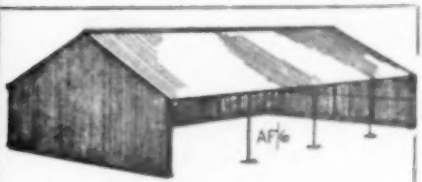

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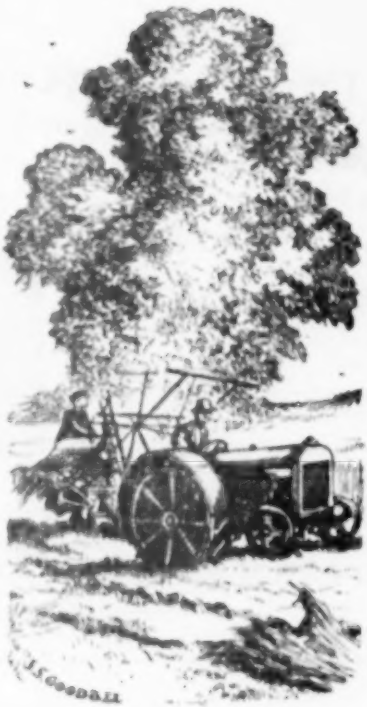

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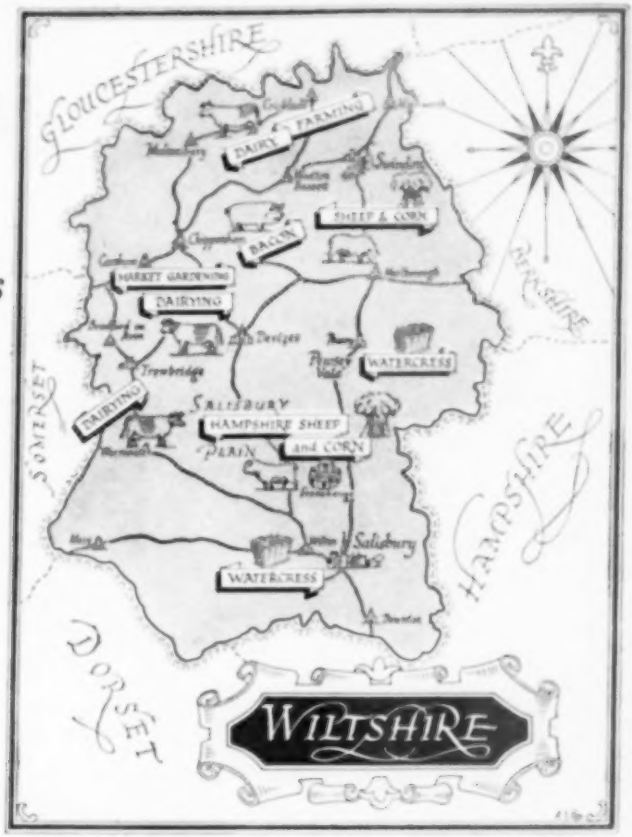

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